

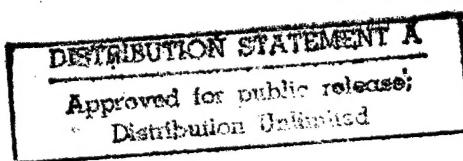
DOCUMENTED BRIEFING



Measurement of USMC Logistics Processes

*Creating a Baseline to Support
Precision Logistics Implementation*

*Marc L. Robbins, Patricia M. Boren, Rick Eden,
Daniel A. Relles*



National Defense Research Institute

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PREFACE

Marine Corps leaders recognize the need to improve support to expeditionary forces. To help explore options for improving logistics, the Marine Corps asked RAND to undertake a two-pronged research effort. One perspective explores options for improving the Marine Corps' logistics through a "top-down" analysis of the totality of logistics processes. The second, bottom-up, perspective evaluates options for improving Marine logistics by helping with the development, measurement, and assessment of specific initiatives. Bottom-up analyses are (1) measuring order and ship and repair cycle times and (2) examining outsourcing options. By analyzing improvement options from two perspectives, the research aims to achieve both a broad and integrated overview and detailed evaluations of selected initiatives undertaken in the field.

Results from the top-down analysis and the outsourcing options study are being documented elsewhere. This documented briefing provides evidence on Marine Corps logistics process performance. It lays down baseline measurements of Marine repair cycle and order and ship times, the latter including both retail and wholesale support, with calendar year 1996 selected as the baseline from which to judge the benefits of future changes. It shows an initial diagnosis of the reasons for the baseline performance. An earlier version of this briefing was originally presented to the quarterly meeting of the Marine Corps logistics generals, at Camp Lejeune, NC, on November 19, 1996.

This research is sponsored by the Deputy Chief of Staff for Installations and Logistics (I&L). The results of this project, documented herein, are intended to support implementation of Marine Corps logistics improvements. It should be of interest to Marine Corps logisticians and others interested in logistics and performance measurement. Comments may be sent to the principal author by email (Marc_Robbins@rand.org) or to the principal investigators leading this project (Nancy_Moore@rand.org and David_Kassing@rand.org), or by post at:

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The research reported here was conducted within the Forces and Resources Policy Center of RAND's National Defense Research Institute, a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Commands, and the defense agencies.

SUMMARY

This documented briefing provides a baseline measurement of current Marine repair cycle times (RCT) and order and ship times (OST), the latter including both retail and wholesale support. Its primary goal is to provide USMC leaders with the information they need to evaluate recent Marine logistics response times (LRT) and to assess the need for improvement. A secondary goal is to help the Marine Corps understand the capabilities and limitations of its current data systems. An early version of this briefing was originally presented to the quarterly meeting of the Marine Corps logistics generals, at Camp Lejeune, NC, on November 19, 1996.

To measure logistics response times, it is important to define each logistics process and the subprocesses that comprise it. We measured logistics response times for three processes—on-base repair, order and ship from retail supplies, and order and ship from wholesale supplies. Figure S.1 depicts graphically how these processes interrelate.

REPAIR CYCLE TIMES

Defining the On-base Repair Process

The repair process includes all actions required to return an inoperative weapon system (principal end item, or PEI) or secondary reparable (secrep) to serviceable status. This includes all repair actions at each maintenance echelon involved and the retrograde of the item between echelons at the retail level, that is, within the Marine Expeditionary Force (MEF).

Data for Measuring RCT

The Marine Corps has a nationally archived database of Marine Corps Integrated Maintenance Management System (MIMMS) data collected from equipment repair orders (EROs) which, when closed, are transmitted to the Marine Data Analysis Center at MARCORLOGBASE-Albany (MCLB-Albany). This database provided the data for our analysis of Marine on-base repair cycle times. We

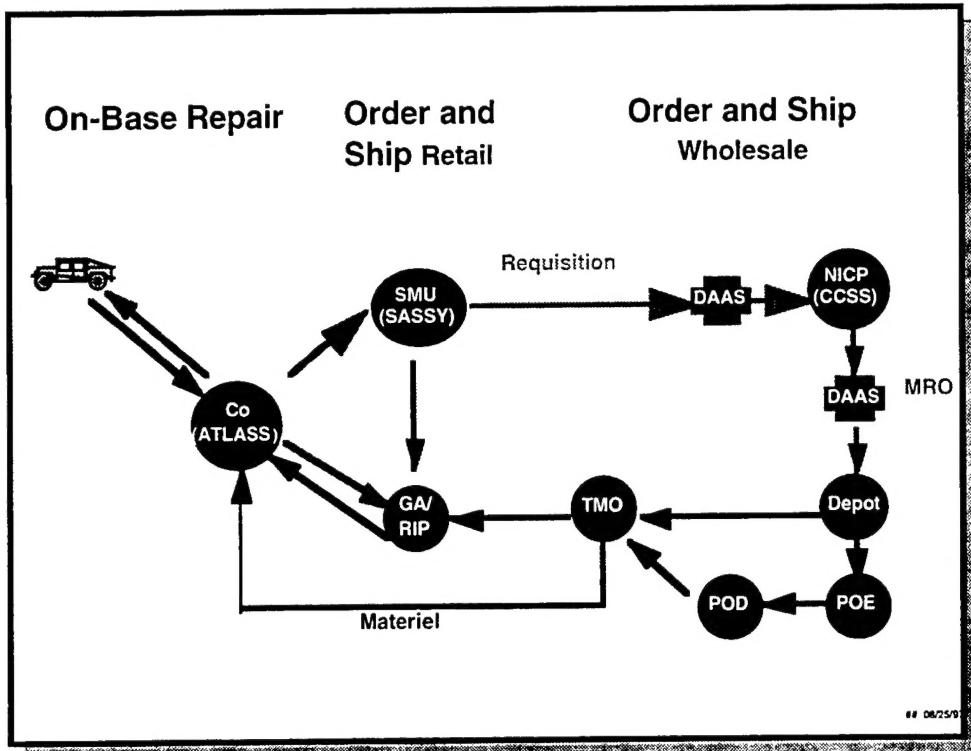


Figure S.1—We Measured the Current Performance of Three Interlinked Logistics Processes

obtained data on all EROs that closed in calendar year 1996 for maintenance echelons 2 through 4.

RCT Performance

Figure S.2 illustrates our general finding that RCTs are slow and variable. It presents the example of "M"-category repairs, those for deadlined MARES-reportable items, that closed in a one-month period at 1 FSSG, Camp Pendleton. The 50th, 75th, and 95th percentiles of the RCTs for these M-category repairs are approximately 20, 40, and 110 days, respectively.

By analyzing the status histories of these repairs,¹ we gained insight into possible drivers of long and variable RCTs. We found that the slowest quartile of these repairs took, on average, 17 times as long to

¹Obtained through a special data collection. Status histories are not maintained in the archived MIMMS database.

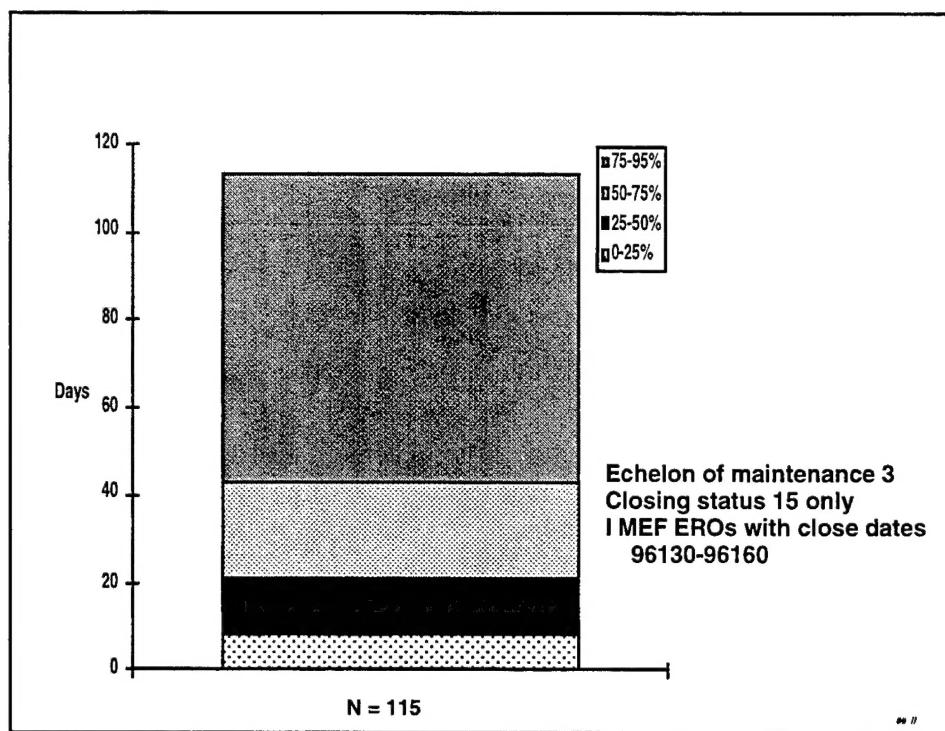


Figure S.2—RCTs for Critical (MARES-Reportable) Systems Are Long and Variable

complete as the fastest quartile. What accounted for that large difference was not wrench-turning, nor was it shortages in space or technician availability. Overwhelmingly, the slowest M-category repairs were driven by unavailability of parts.

ORDER AND SHIP TIMES FROM RETAIL SUPPLY

We turn now to the supply of parts, beginning with measurement of the order and ship (O&S) process for parts actually available on the shelf in retail supply (that is, these measurements do not include backorders). Retail stocks are critical in supporting repair: approximately 70 to 80 percent of parts used in repairs are filled either by the General Account or the Reparable Issue Point, according to archived supply data.

Defining the Order and Ship Process from Retail Supply

The retail O&S process begins with the identification of the repair part(s) required, its validation and documentation through varying

levels of authority, and then the formal creation of the requisition itself in the Asset Tracking for Logistics and Supply System (ATLASS). Requisitions are passed from ATLASS to the Supported Activities Supply Support System (SASSY) either directly (e.g., through email) or through the “sneaker net” (driving or walking requisition-filled diskettes). At the SASSY Management Unit (SMU), SASSY cycles are run typically on a daily basis (three to five days a week), part availability is determined, high-priority requisitions for backordered items are passed on to wholesale supply, and materiel release orders (MROs) are cut for local stocks. The MROs are printed and distributed to warehouses, where items are retrieved from supply bins and readied for customer pickup or direct delivery. Once received, the item is either delivered directly to the mechanic or put into the layette (that is, parts bin for the item in repair) for the carcass in repair. A receipt acknowledgment is entered into ATLASS, with a D6T being passed to SASSY to close out the supply record, and the information is passed to MIMMS and the parts receipt is recorded for the mechanic in the next daily progress report.

Data for Measuring Retail OST

We measured retail OSTs with the same MIMMS database used to baseline RCTs. The archived MIMMS database maintained at MCLB-Albany includes abbreviated histories of all parts used in executing a repair. These records include part used, requisition document number, date received or canceled, the source of supply, and latest status of the requisition. For this analysis, we selected only those requisitions satisfied out of the MEF’s Supply Battalion (the General Account for consumables and the Reparable Issue Point for repairables). We calculated OSTs for parts received in CY96 and show end-to-end times. The data do not permit us to measure the time incurred in subsegments of the retail order and ship process.

OST Performance from Retail Supply

Figure S.3 shows that retail OSTs are slow and variable for each active MEF—remarkably so, given that these times are for parts that

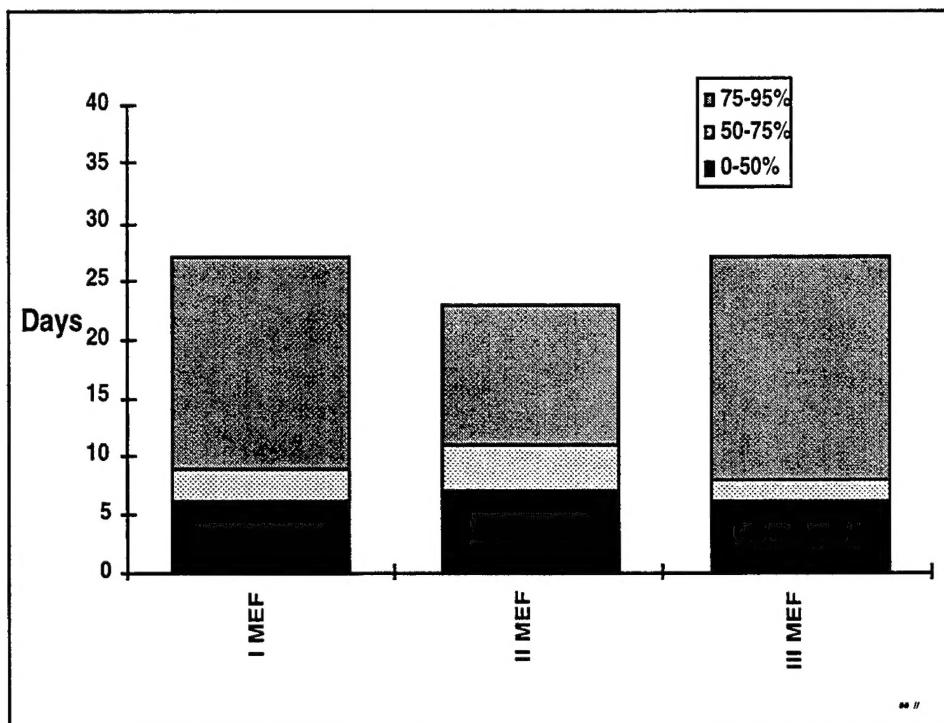


Figure S.3—Each MEF Shows Substantial Delays in Filling Orders from Local Stocks

may be no more than a few miles away from the customer. Half take upward of a week to be filled; many take more than two weeks for the entire O&S process, even though backorders are not at issue here. What is not clear from these results is what accounts for the time incurred: the order and ship process has many steps and many actors, any or all of which may cause delays.

ORDER AND SHIP TIMES FROM WHOLESALE SUPPLY

Defining the Wholesale Order and Ship Process

The order and ship process for items from wholesale supply has several branches, not all shown in Figure S.1. Requisitions for wholesale supply can come both from the maintenance shop or from retail supply, from the former if the item is not held (or is in zero balance) at retail supply and the requisition has high enough priority, and for the latter for standard (often automated) replenishment requisitions. Requisitions from the maintenance shop follow the same procedure as described previously until they reach the SMU. If the

item is not available locally and the requisition has a high priority, it will be reviewed and approved at the Supply Battalion based on a financial value threshold.

All requisitions are then passed via SASSY to the wholesale system, first entering that system via the Defense Automated Addressing System (DAAS) computer at Dayton, OH. Requisitions are routed via the DAAS system to the appropriate national inventory control point (NICP) where item managers handle requisitions and manage stockage levels for specific groups of items. At the NICP, a materiel release order (MRO) is cut, usually automatically; in certain circumstances, a requisition will be bounced out of the system for further review by the inventory manager.

MROs will be sourced to a DLA supply depot for processing and shipping of the materiel. The MRO will be transmitted via the DAAS system and be entered into the depot's computer system where it will be pulled down, typically at midnight, for processing the next day. MROs are prioritized by the depot for picking and packing, and the mode of shipment—determined by the requisition's priority and its required delivery date—will be selected. The package will be offered for shipment and then transported to the installation, often to the Traffic Management Office, unless another address is specified. It is then sent to the Supply Battalion or to other customers, or deposited in a marked bin for pickup by customers. Upon receipt by the customer, such as a maintenance shop, it follows the same procedure as before, with a D6T (acknowledgment of receipt) being posted through ATLASS to SASSY. When the SASSY cycle is run, a D6S is posted to DAAS, which completes the requisition history and closes out the record.

Data for Measuring Wholesale OST

We measured USMC OSTs for wholesale supply using the archived requisition histories maintained in DLA's Logistics Response Time (LRT) database. The LRT currently tracks most time segments for the services for items managed by DLA and the Navy. For the Marine

Corps, this includes over one million requisitions for CY96 alone. As with retail OST, we limit our analysis to non-backordered requisitions.

Because the LRT captures five time-stamps for the wholesale O&S process, we are able to measure not only overall OST but also four segments:

- on-base processing times until the requisition is received at the wholesale level;
- the processing time at the NICP required to issue an MRO;
- the depot handling time, including picking, packing, and delivering to the shipper;
- the time from when the item leaves the depot, is transported to the installation, and then is distributed to the ultimate customer and the record is closed out.

OST Performance from Wholesale Supply

Our measurements revealed that, as with on-base RCT and retail OST, wholesale OST performance is also slow and variable. Figure S.4

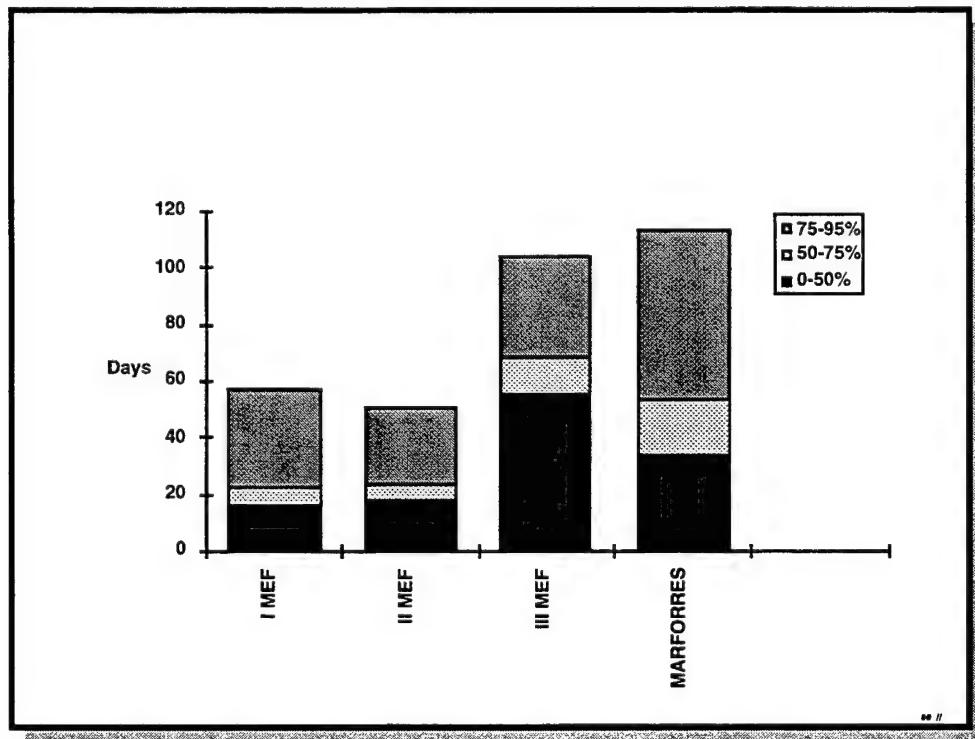


Figure S.4—OST from Wholesale Supply for Corps and by MEF

illustrates this finding by displaying wholesale OSTs for each MEF. The differences between CONUS (I and II) and OCONUS (III) active MEFs are clearly driven by the need to transport materiel across the Pacific; the longer time associated with the Reserve (MARFORRES) MEF requisitions arises from the interrupted nature of Reserve operations. The LRT data do not provide additional time-stamps to further analyze the extended OCONUS transit segment.

Average Marine OSTs fall far short of current UMMIPS standards—which themselves tend to be far more lax than current practices in the commercial sector. Figure S.5 illustrates this point with the example of wholesale OSTs from I MEF. It shows that high-priority (IPG 1) requisitions took on average about three times the UMMIPS standard for CONUS of five days.

When we analyzed the four segments of wholesale OST (not shown), we found that OSTs tended to be driven by ship-to-receive times and by requisition processing time on base, both of which were

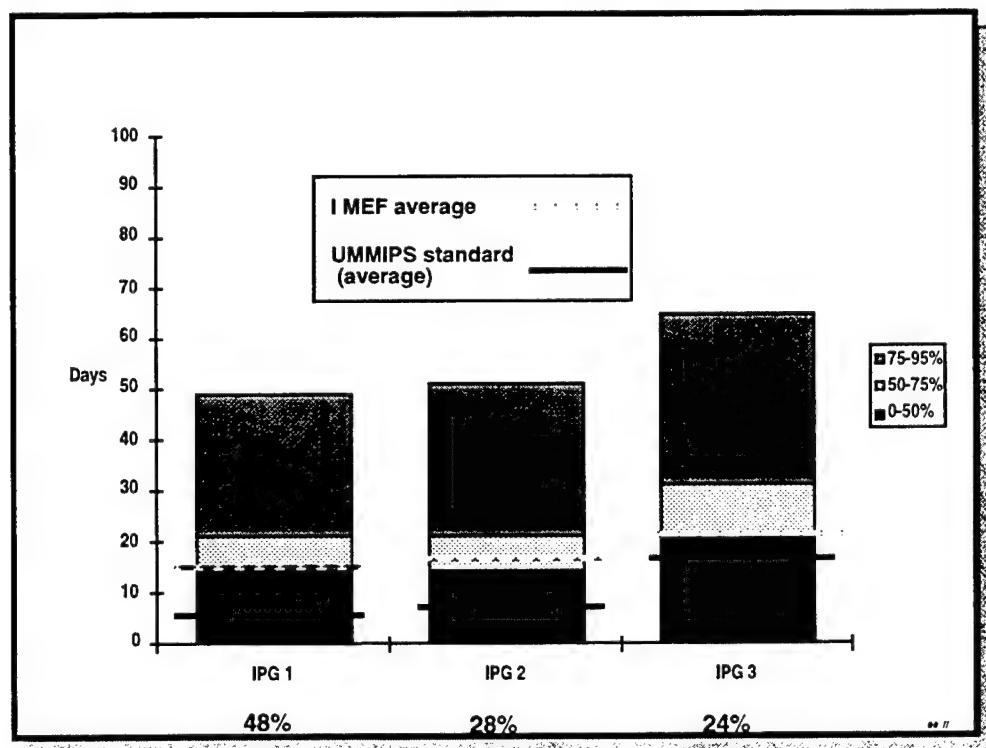


Figure S.5—OST from Wholesale Supply Falls Short of UMMIPS Standards

significantly affected by on-base processes. Moreover, requisitions passed through from repair activities take longer to leave the installation than lower-priority repairs that are merely needed to replenish local stocks.

OBSERVATIONS ON LRT PERFORMANCE AND MEASUREMENT

Each of the three processes measured here—repair, retail order and ship, and order and ship from wholesale supply—suffers from delays and high variability. Because these and other processes are interlinked, performance deficits in one can worsen the performance of others. Some of these negative interactions are depicted in Figure S.6.

For example, as the figure suggests, slow repair will reduce the number of serviceable items at the RIP, slowing up other repairs depending on those items and impacting the stockage allocation for these often expensive components. Poor parts identification and bad requisitioning procedures will fill the pipelines with requisitions for

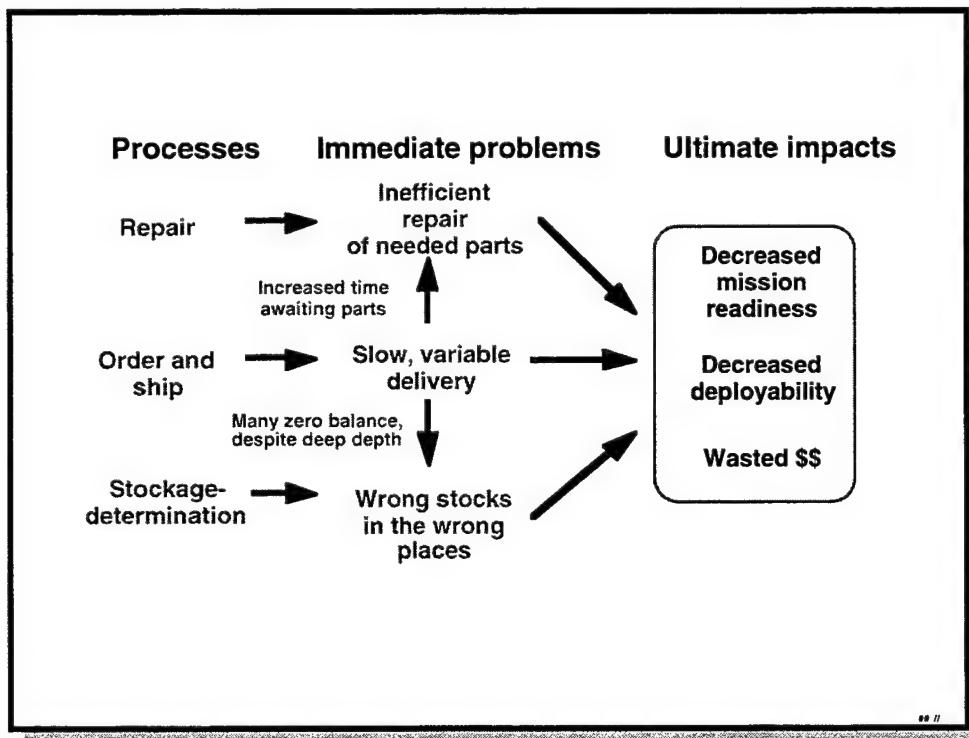


Figure S.6—Poorly Performing Processes Have Many Bad Effects

unneeded parts, both at the retail and wholesale level, and will absorb space and resources better used by more critical items. Slow OSTs from wholesale supply will impact RCTs and drive up the level of stockage requirements at the retail level, while narrowing the breadth of items that can be carried. Finally, slow and variable retail OSTs will have a direct link to slow and variable RCTs.

IMPLICATIONS FOR MARINE LOGISTICS PROCESS IMPROVEMENT

The Marine Corps is aggressively pursuing improvement in its logistics processes, most recently under the umbrella of the "Precision Logistics" initiative. These baseline performance measures suggest several implications and recommendations for these efforts:

- Performance measurement is critical to process improvement strategies; in particular, logisticians need to be sensitive to both the length and high variability of the Corps' logistics processes.
- Diagnostic information is vital for detecting core problems and directing improvement efforts.
- Recurrent performance reporting to persons who can make changes is vital, especially to determine whether changes are having the desired effect. These reports must also be available to the Marines who do the repair, ordering, shipping, and receiving.
- Many parts of the processes are controlled by the Marines and can be fixed by Marines; for example, the longest delays in order and ship times from wholesale supply can be found on the installations themselves.
- For parts of the processes outside their control, the Marines need to form partnerships with suppliers and other customers. Especially in wholesale supply, where much is held and controlled by other organizations and services, the Marine Corps needs to work closely with the Defense Logistics Agency, the General Support Administration, the

Military Traffic Management Command, and the other Services to help the Department of Defense build a more effective logistics system, thus ensuring better support of the Marine in the field.

A BASELINE FOR MEASURING PROCESS IMPROVEMENT

Appendices A, B, and C present a performance baseline, a kind of "sourcebook," against which to compare later performance. Improvements can only be acknowledged through comparison to some given standard, whether in time or against similar organizations. These appendices attempt to supply both types of information. They present baseline performance measures for each of the three logistics processes for a selected period in time, calendar year 1996. The appendices also present data on the performance of different organizations, from the MEF down to the individual unit level, for each of the three processes. While comparisons, both across organizations and time, should be done carefully, given frequent incompatibilities, these appendices may serve to some degree as a common yardstick as the Marine Corps proceeds on the challenging path of achieving logistics performance that is faster, better, and cheaper.

ACKNOWLEDGMENTS

This document represents the fruits of a joint effort between RAND researchers and a large number of Marine logisticians invested in performance measurement and committed to process improvement.

We benefited from the strong and continuing support of our project sponsor, Major General Joe Stewart, Deputy Chief of Staff for Installations and Logistics. At DC/S I&L we are grateful for the continuing help we received from Colonel Mark Lott, then-Colonel Rick Kelly, and from the "Turtles": Major Mark Laviolette, Major Mark Adams, Major Dave Kunzman, and Captain Steve Pellegrino. This work could not have been done without the day-to-day supervision and help we received from another "Turtle," Major George Pointon. We owe a special debt of gratitude to Laurel Abraham for her superhuman efforts in acquiring and transmitting to us much of the data that are central to the analysis and measurement presented here.

At 1 FSSG, Camp Pendleton, we were fortunate to receive expert advice and constructive criticism of our early analyses. We are particularly grateful for the strong interest and support this work received there from then-Brigadier General Gary McKissock and members of the 1 FSSG, in particular Colonel Dale Town, Lieutenant Colonel Jerry Calleros, Lieutenant Colonel Mike Kampsen, Lieutenant Colonel Jim Kessler, and Lieutenant Colonel Steve Dodd. At II MEF, we wish to acknowledge the strong support and direction we received from Colonel Ed Dillard, Lieutenant Colonel Roy Truba, and Major Frank Payne. At III MEF, Colonel Mark Lott, in his new incarnation, was of great help to us, as was Staff Sergeant Steven Parker.

This data-intensive analysis could not have been executed without the aid, responsiveness, and enthusiasm of personnel at the Marine Data Analysis Center, MARCORLOGBASE-Albany. In particular, we are grateful to Captain Mike Lepson, Fred Day, Mike Carroll, and Staff Sergeant Morrison. Again, we wish to thank these and all other Marines and Marine civilians who helped make this a better product.

To analyze order and ship time from wholesale support, we used the Logistics Response Time database maintained by the Defense Logistics Agency. We are grateful to Captain (USN) Steve Morris for facilitating our access to this database and sharing his deep expertise; we also wish to thank David Raber for patiently enduring our many questions on the LRT database. We also wish to acknowledge assistance we received from Jimmy Tucker and Mary Maurer at DAASC.

Lastly, we appreciate the contributions made by our RAND colleagues to this analysis, in particular John Dumond and our reviewers Lionel Galway and Ken Girardini. This work has also benefited from the insights and support of the project leadership, Nancy Moore and David Kassing. We owe a special debt of gratitude to Bari Whitbeck, who managed the production of both briefing and document under severe time constraints, and did so professionally and with grace and humor.

ACRONYMS AND ABBREVIATIONS

ATLASS	Asset Tracking for Logistics and Supply System
CONUS	Continental United States
CY	Calendar year
DAAS	Defense Automated Addressing System
DAASC	Defense Automated Addressing System Center
DC/S I&L	Deputy Chief of Staff (Installation and Logistics)
DLA	Defense Logistics Agency
DRIS	Date Received in Shop
ERO	Equipment Repair Order
EROSL	Equipment Repair Order Shopping List
FMF	Fleet Marine Force
FORSCOM	Forces Command
FSSG	Force Service Support Group
FY	Fiscal year
GA	General Account
GSM	General Support Maintenance
ICP	Inventory Control Point
IPG	Issue Priority Group
LIF	Logistics Intelligence File
LRT	Logistics Response time
LTL	Less than Truckload
MARCORLOGBASE	Marine Corps Logistics Base
MARDIV	Marine Division
MARES	Marine Automated Readiness Execution System
MARFORRES	Marine Forces—Reserves
MAW	Marine Air Wing
MCLB	Marine Corps Logistics Base
MEF	Marine Expeditionary Force
MIMMS	Marine Corps Integrated Maintenance
	Management System
MRO	Materiel Release Order
MSC	Major Supported Command
MTM	Motor Transport Maintenance
NICP	National Inventory Control Point
NIIN	National Item Identification Number
O&S	Order and Ship

OCONUS	Outside of Continental United States
OST	Order and Ship Time
PEI	Principal End Item
RCT	Repair Cycle Time
RDD	Required Delivery Date
RIP	Reparable Issue Point
RUC	Receiving Unit Code
SASSY	Supported Activity Supply System
Secrep	Secondary reparable
SMU	SASSY Management Unit
SSA	Supply Support Activity
TAM	Table of Authorized Materiel
TAMCN	Table of Authorized Materiel Control Number
TL	Truckload
UAC	Unit Activity Code
UMMIPS	Uniform Military Movement and Issue Priority System
USFK	United States Forces—Korea
USMC	United States Marine Corps

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Measurement of USMC Logistics Processes

Creating a Baseline to Support Precision Logistics Implementation

This is an expanded version of a presentation to the US Marine Corps logistics generals' off-site meeting held at Camp Lejeune, NC, November 19, 1996. The briefing was part of a day-long session on Marine efforts to begin implementation of "Precision Logistics," a concept described by USMC DC/S I&L (Deputy Chief of Staff (Installations and Logistics)) MajGen Joseph Stewart as the gateway by which the Marine Corps will seek a complete overhaul of the way logistics is provided at the tactical, operational, and strategic levels. Although the process cuts across many facets of logistics, it focuses initially on attacking logistics response times. From improvement in logistics response times, further benefits should follow, such as higher materiel readiness, leaner deployment and employment signatures, lower inventory levels, and reduced costs.

Background of RAND Project

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- RAND tasked by DCS I&L to assist USMC Vanguard efforts
 - Evaluate and integrate initiatives
 - Help improve USMC outsourcing capabilities
 - Evaluate and assist logistics process improvements
- Last task has been expanded to help develop performance metrics and performance reporting system
 - Assist efforts to implement Precision Logistics
 - Leverage off RAND efforts supporting the Army's Velocity Management initiative

The RAND Corporation, through its National Defense Research Institute, was asked by the DC/S I&L to evaluate ongoing Marine Corps efforts to improve logistics processes and to help build structures and strategies for enhancing their effectiveness. One element of the RAND project has been to evaluate logistics response times, especially repair cycle and order and ship. The intent of this effort was to evaluate and assist initiatives being pursued in the Force Service Support Groups (FSSG) at I and II Marine Expeditionary Forces (MEFs), located at Camps Pendleton and Lejeune, respectively. The project's focus was expanded to help the Marine Corps conduct a Corps-wide baseline measurement of current repair cycle times (RCT) and order and ship times (OST) at the base and wholesale levels. These results may be used to form the basis for an institutionalized Marine Corps logistics response time reporting system, to be used to assist ongoing Precision Logistics efforts. In many ways, this RAND effort is similar to work being done in a related process improvement initiative pursued by the Army under the name Velocity Management. RAND's efforts are configured, however, to adapt to the different nature, structure, and practices of the Marine Corps.

Purposes of Presentation

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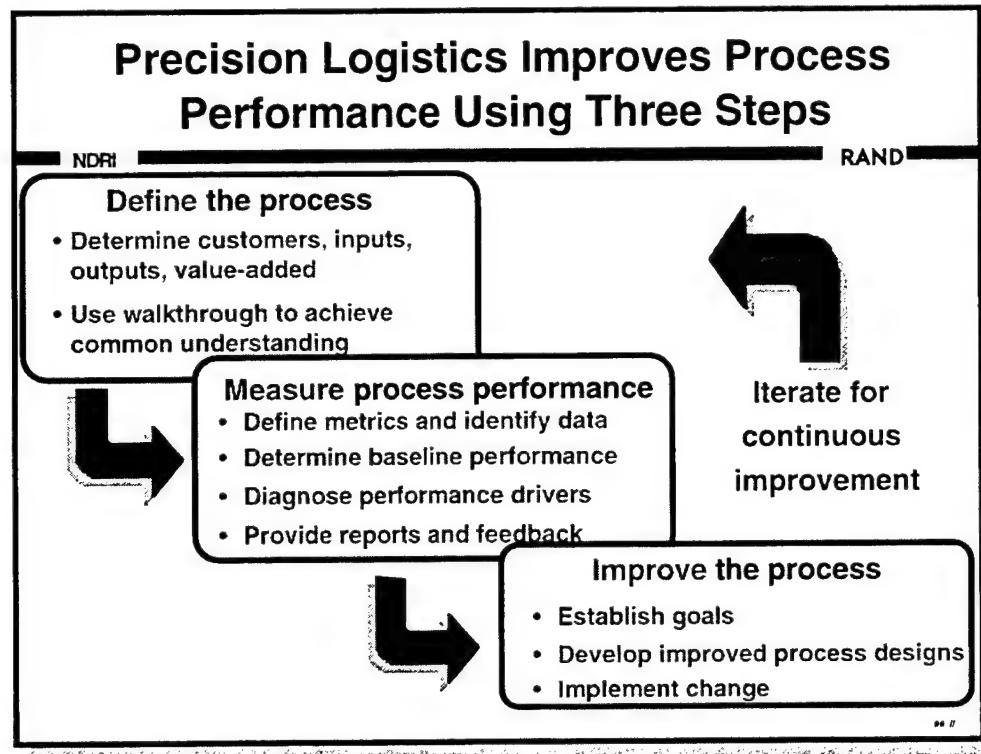
- Illustrate application of “Define-Measure-Improve” methodology to Marine Corps logistics processes
- Provide basis for creating a set of baseline measures for key logistics processes
- Present preliminary diagnostics of logistics performance

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This chart lays out the agenda of the briefing.

This briefing demonstrates measurement capability and provides a baseline measurement of Marine Corps logistics process performance.

With the intent of helping the Marine Corps build a permanent performance reporting system, the briefing attempts to show both the strengths and weaknesses of existing information systems, suggesting ways to make performance reporting a more valuable tool to support continuing process improvement.



The underlying philosophy of Precision Logistics is that logistics processes can be improved continuously by rigorous application of a simple methodology: the "Define-Measure-Improve" technique. By this method, process improvement teams seek first to *define* the process they aim to improve; typically, this means "walking" the process of interest to understand, step by step, precisely how a repair or a retrograde is accomplished. It means identifying the customers, inputs, and outputs of the process, and defining the value added at each step.

Next, having created a detailed laydown of the process of interest, the process improvement team seeks to *measure process performance*. An obvious measure is time (which this document emphasizes) but the scope need not be limited to that. It could be that the process measure is money used efficiently in a value-adding way, or used for non-value-adding functions, or it could be flaws in quality of the process, such as high numbers of components with no evidence of failure being sent to repair, or components that fail well before the mean time between failure coming out of repair. As the chart shows, measurement serves

three principal functions, each placing different demands on data collection and processing systems. Understanding performance requires a broad-based database, covering all parts of the process and in as seamless a fashion as possible. The diagnostic function requires highly detailed data on individual parts of the process, such as requisition histories to explain short parts problems or test equipment availability to explain delays while awaiting shop. The monitoring function, by which performance measures are reported to the repair facilities in the field, requires a standard format meaningful to all customers of these reports and that is produced in a timely enough fashion to be useful yet also covers enough of the repair histories to uncover general trends.

Finally, the critical part of this methodology, after the first two steps have prepared the way, is to *improve* the process. Many of the process improvements will "fall out" of the first steps, or at least should be strongly suggested by them. At the least, the process laydowns and measurements will point out the long poles and low-hanging fruit; they will reduce attention paid to side concerns (which may have been critical to other processes or at another time). The measurement system will capture and provide feedback on the effect of these improvements; then, in an iterative process, the whole cycle will begin again and repeat indefinitely.

There Are Three Reasons to Measure Process Performance

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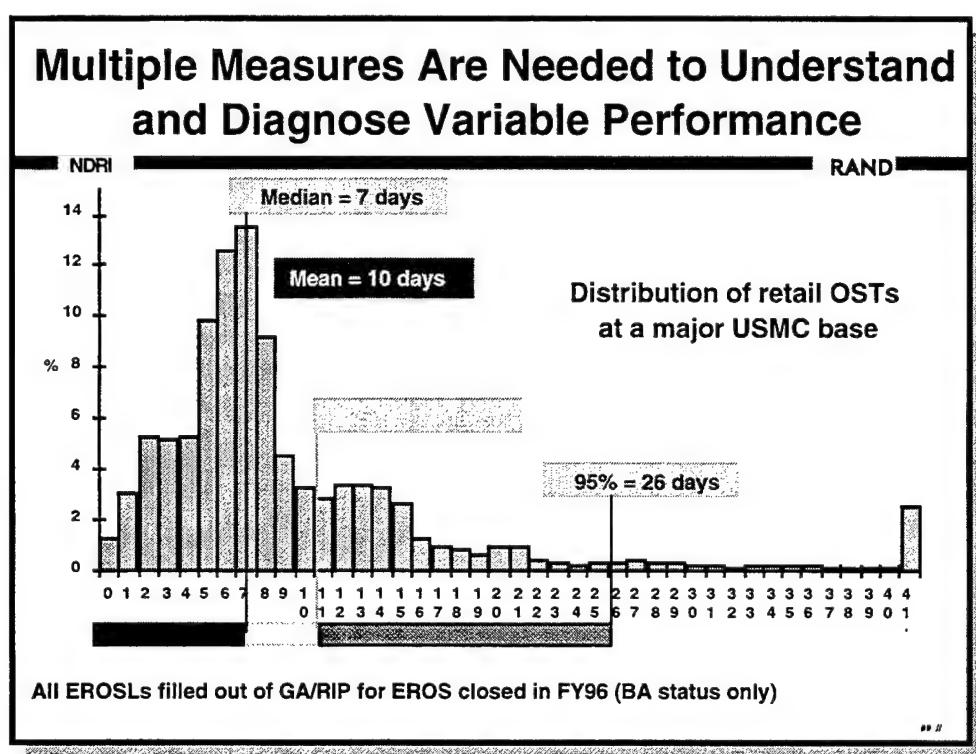
- Understand current performance
 - For planning
- Diagnose drivers of poor performance
 - For targeting improvement efforts
- Monitor improvement
 - For providing feedback to implementors

The performance measurements presented here emphasize the first two reasons.

Performance measurement is a powerful tool for making the processes that support the warfighter operate faster, better, and cheaper. Process improvement without measurement depends on anecdotal evidence for confirmation; quite often, it can lead to a frittering away of effort with little information about whether interventions are valuable or useless.

Performance measurement carries the three benefits captured in the chart above. It is critical simply to understand how your processes are performing (especially against some standard or comparable organization). But performance measurement is limited in value unless it includes diagnostic measures, which give some sense of the "why" of performance: Is bad performance inherent and unlikely to change? or Is it due to a flawed process that might be easily and quickly improved? Finally, regular reporting of performance is required to show whether interventions have had the desired effect, and to motivate continued improvement.

Because a new initiative like Precision Logistics must begin with an understanding of how the system currently performs, this briefing focuses primarily on baseline measurement.



Many analytical results in this document are presented in a form that may be unfamiliar to most readers, using "medians," "percentiles," and the like. This chart briefly explains this mode of presentation.

Time-based performance metrics for logistics processes are typically reported with a single measure, that being the mean, or average. While means can convey useful information, they offer little insight into the performance of processes that are extremely variable.

The above chart offers an example of this. It presents the distribution of order and ship times at a major Marine installation (one of the active MEFs) for items from local supply being sent to customers on the installation. The horizontal axis represents the order and ship time (from document creation date until the requisition is closed out with a receipt) in days; the vertical axis shows what percentage of all orders were completed in a given number of days. (For example, about 13 percent of all requisitions were filled on the seventh day, and about 4 percent on the ninth day.)

The mean, or average, order and ship time is ten days. However, only about 3 percent of all requisitions were actually filled on the tenth

day; all the rest took more or fewer days. In fact, no single number adequately describes how long it took to order and deliver these items: many took just a couple days, while a large percentage took several weeks.²

Not only the *length* of process times but also their *variability* are particular concerns for an efficient and effective logistics system. The chart shows that OSTs for these items are quite long—e.g., an average of ten days for an item on the shelf for a customer no more than a few miles away. Even worse from the customer's perspective is the unpredictability of the system. Some items are shipped and received almost immediately; others, mysteriously, may take several weeks.

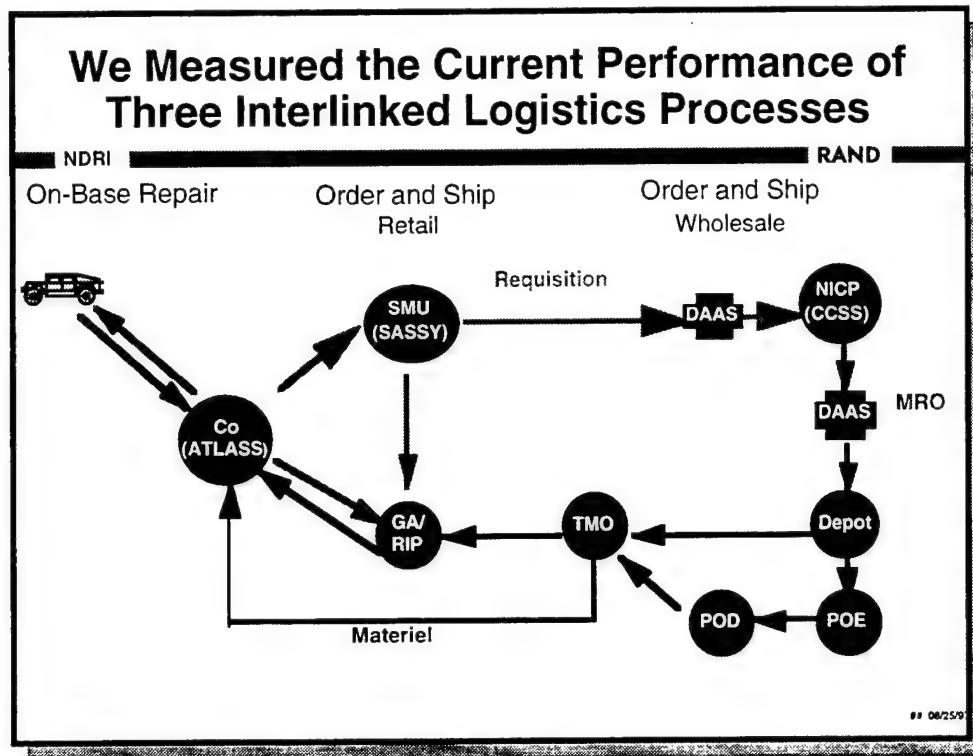
Consider the effect on critical repair actions. Typically, more than one part is required for a repair; quite often, a dozen or more separate requisitions may be made. Given the distribution of OSTs above, the order and ship process becomes a lottery. Some number of items may be delivered quickly, but the distribution suggests that at least one requisition will take two, three, or four weeks. If all requisitions are important to the repair, it doesn't matter that some parts are received quickly; the repair action will depend on the part that takes the longest to arrive.

To better convey both the length and unpredictability of logistics processes, we use a different form of measurement, expressed in terms of percentiles. The chart above shows measures for the median, 75th, and 95th percentiles. The median is the value that is at the midpoint: half the cases are faster and half slower (thus, one half of all requisitions were filled in a week or less). The 75th percentile shows how long it takes to fill three-quarters of all requisitions, and the 95th percentile shows the time at that level (e.g., in the case above, the slowest remaining 5 percent of the requisitions took more than 26 days to be filled).

One way of showing these measures graphically is with bar charts. An example of a bar associated with the distribution is represented at the bottom of the chart, with shaded coding for the median, the 75th,

²This analysis excluded backordered items.

and the 95th percentile. We adopt this as a standard representation of logistics response time (though we will tilt the bar to the vertical in the following pages).



We look at performance in terms of logistics response times for three interlinked processes; repair, order and ship from retail supplies, and order and ship from wholesale supplies.

This chart, which also serves as the roadmap for this briefing, depicts graphically how these processes interrelate.

The repair cycle includes all actions required to return an inoperative weapon system (principal end item, or PEI) or secondary reparable (secrep) to serviceable status. This includes all repair actions at each maintenance echelon involved and the retrograde of the item between echelons.

Many factors affect the repair process (and several of those will be discussed later), but availability of repair parts is especially critical. The nearest potential source for needed repair parts (outside of pre-expended bin materiel) is retail supply, typically the General Account (consumables) or the Reparable Issue Point (for repairable items). The probability of getting repair parts from these sources in a timely manner depends on several factors, including the accuracy of the stockage determination process, the consistency with which stocks are

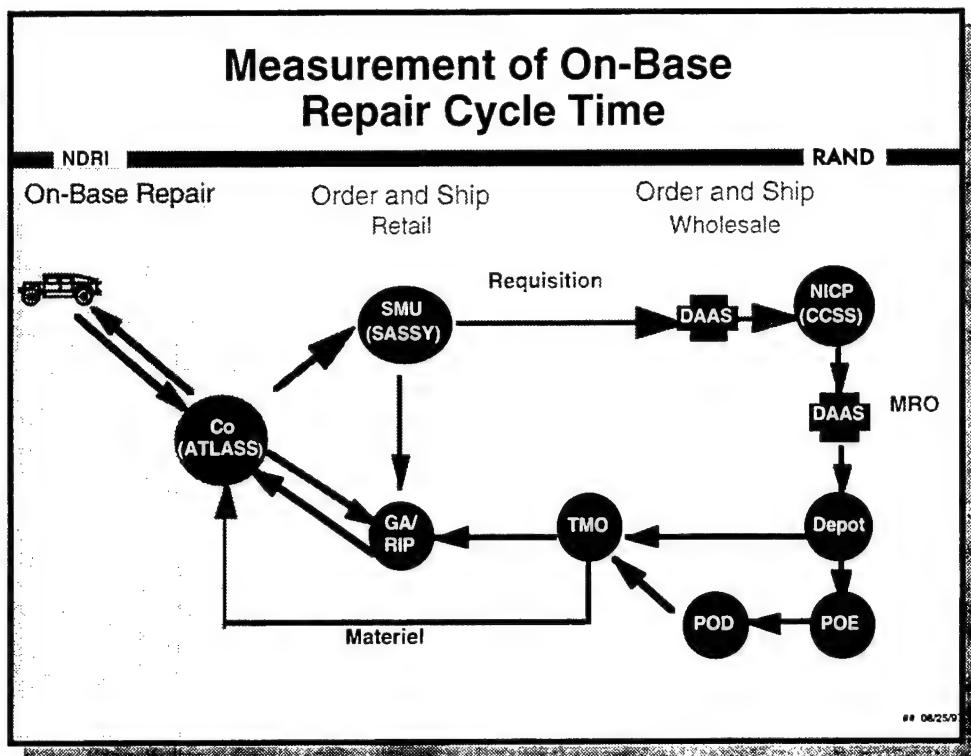
maintained, and the time taken to create and process parts requisitions, and to deliver the parts to the customer.³

For those parts not available at the retail level, wholesale supply provides the nearest source. National-level parts stockpiles are maintained in supply depots operated by DoD's Defense Logistics Agency; the parts themselves are managed by inventory managers at national inventory control points. Just as for retail stockage (though in a more complicated fashion), success in getting needed parts to mechanics depends on wholesale stockage policies, the maintaining of stockage levels themselves, and the execution of the order and ship process.

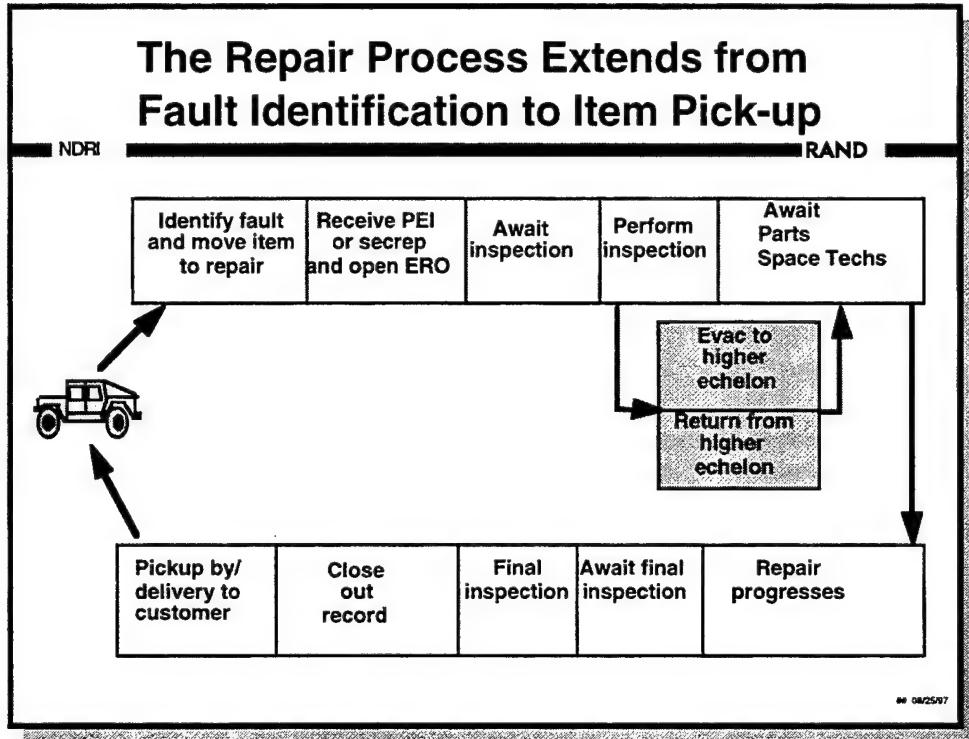
In the remainder of this briefing, we examine the performance of three important logistics processes: repair cycle, order and ship from retail supply, and order and ship from wholesale supply.⁴ In each case, we focus on the measurement of logistics response time.

³We did not examine the performance of alternative sources of supply at the local level, such as local purchases, scrounging, etc.

⁴These are not the only logistics processes we could (or should) focus on. Others include, for example, stockage determination, financial management, and logistics elements of the deployment process.



We begin by examining current Marine repair cycle times at the retail level (that is, repairs within the MEF).



To measure logistics response time, it is important to define the underlying process and the subprocesses that comprise it. This can be a complicated task: most logistics processes involve many actors, multiple steps and handoffs, and different branches and forking points.

The chart above presents a simplified breakdown of the repair process. Repair begins with the identification of a fault, whether by the equipment owner or by mechanics at any echelon. The repair cycle also includes retrograde of the broken equipment, whether an end item hauled back to the Motor Transport Maintenance Company, a radio returned to the Electronics Maintenance Company, or an unserviceable component removed from a vehicle and sent back to the General Support Maintenance Company. At the maintenance facility, all steps of the repair process are tracked, including those we can call "value-adding," in which work is actually being done (e.g., initial and final inspections, and actual wrench turning repair time) and those which merely involve waiting and thus are not truly "value-adding." The repair cycle is finally closed when the item is fixed, the paperwork

closed, the owner identified, and the equipment either picked up or delivered to the ultimate customer.⁵

⁵For simplicity, we do not discuss cases when the decision is made not to repair, or the repair cannot be completed, and the item is retrograded to the fifth echelon of repair in the wholesale system.

Repair Cycle Times Were Measured Using MIMMS Data

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- Acquired MIMMS database of all Corps EROs closed in CY96
 - Echelons of maintenance 2-4, all MSCs
- Database includes 305K EROs from FMF
- Analysis of RCT is limited
 - No diagnosis of performance by segment possible due to stripping of ERO status

The Marine Corps has a nationally archived database of Marine Corps Integrated Maintenance Management System (MIMMS) data collected from equipment repair orders (EROs) which, when closed, are transmitted to the Marine Data Analysis Center at MARCORLOGBASE Albany (MCLB-Albany). This database provided the data for our analysis of Marine on-base repair cycle times.

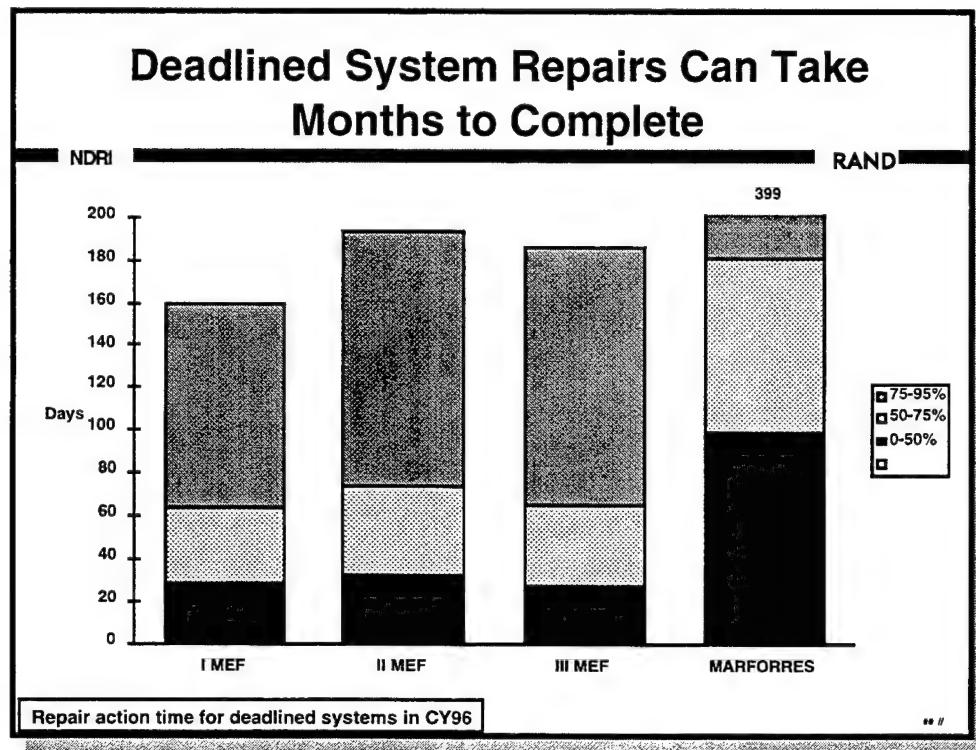
We obtained data on all closed EROs for echelon 2 through 4 work during calendar year 1996. The archived records cover all retail echelons (1-4) but information on and usefulness of echelon 1 EROs are limited, so we restrict the analysis to echelons 2 (motor pool level end item repair), 3 (intermediate level end item repair), and 4 (component level repair).

This analysis looks, insofar as possible, at end-to-end repair time. For example (as illustrated in the process laydown chart), a 2-echelon ERO on a vehicle may be opened by the motor pool, followed by the evacuation of the item to a higher echelon (e.g., Motor Transport Maintenance Company) which then opens a 3-echelon ERO. After finishing its work, MTM closes its ERO and the vehicle is picked up by

the customer, who then finishes 2-echelon work and the final ERO is closed. Our measures capture this complete time and therefore reflect the duration that the vehicle is out of service, and not just the time an ERO is open. (See App. A for a more extended discussion of this point as well as more complete presentation of base-year RCT results.)

Nonetheless, there is considerably more that can and should be done. We have not yet developed and analyzed diagnostics of the repair process that would tell, across the Marine Corps for all types of repairs, how long items stay in short parts status, what the delay is from receipt in shop until the inspection begins, how long it takes to evacuate items to higher echelons of repair, and so forth.⁶

⁶ It is anticipated that these and other issues will be dealt with in a future expanded USMC retail repair cycle time report.

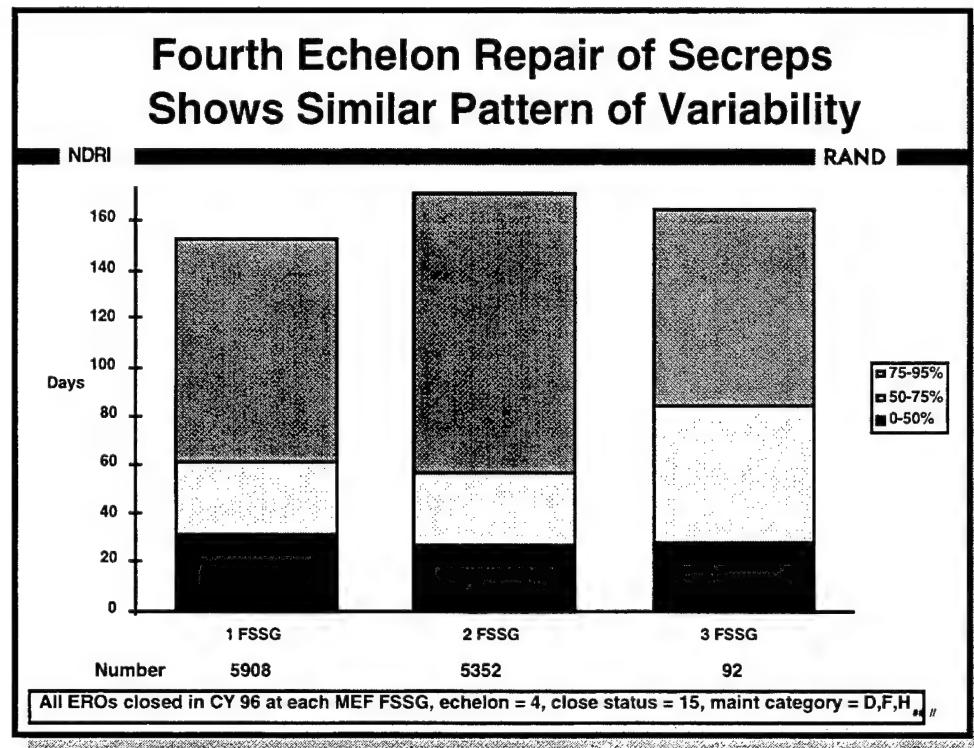


This chart represents the first of many baseline measurements presented in this document. Most of the data for these and following charts can be found in App. A, which also lays out in great detail Marine Corps baseline logistics performance.

This chart presents evidence on Marine Corps performance in principal end item (PEI) repair at the retail level (echelons 2-3). As just described, the measurement captures the time from the first (typically 2-echelon) ERO opened up on a PEI until the last ERO associated with that particular end item is closed. This may include several EROs at either second or third echelon and one or more organizations doing repairs. The EROs in our analysis are linked by TAMCN (Table of Authorized Materiel Control Number) and serial number or bumper number of the PEI. To limit this to only the most important repairs, this chart reports on repair actions for both deadlined MARES-reportable and non-MARES reportable.⁷

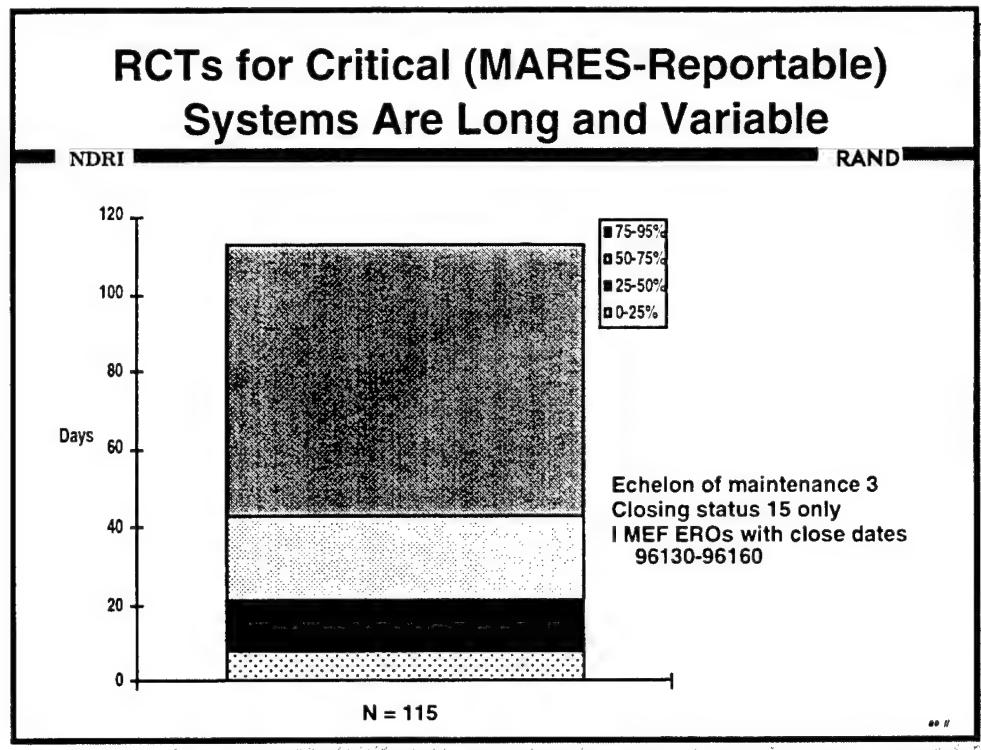
⁷MARES stands for Marine Automated Readiness Execution System. It includes all end items whose availability status is tracked to feed measures of FMF readiness to go to war.

This chart and virtually all that follow use the bar chart format described earlier, showing the distribution of logistics response times from the median performance level to the figures for the 75th and 95th percentiles. These measures are shown above in vertically overlaid bars. For example, in I MEF repairs, the median value is about 29—that is, half the repairs took up to 29 days to complete. The 75th percentile of 63 means that three-quarters of PEI repairs took up to 63 days to finish; or one-quarter took between 29 and 63 days to finish. We also see, with a 95th percentile of 159 days, that 5 percent of all PEI repairs took more than five months, from first date received in shop (DRIS) until final record closeout date.



Component repairs are simpler in concept. There is no cross-echelon movement (all are fourth echelon) and very few organizations do them. In fact, the large majority are done by the General Support Maintenance Company in the MEF Force Service Support Group. Furthermore, typically only one ERO is used per repair action.

The chart above shows the performance of each MEF (meaning mostly, each GSM company) in performing secrep repairs in the 1996 baseline year. Again, the standard percentile metrics are used.



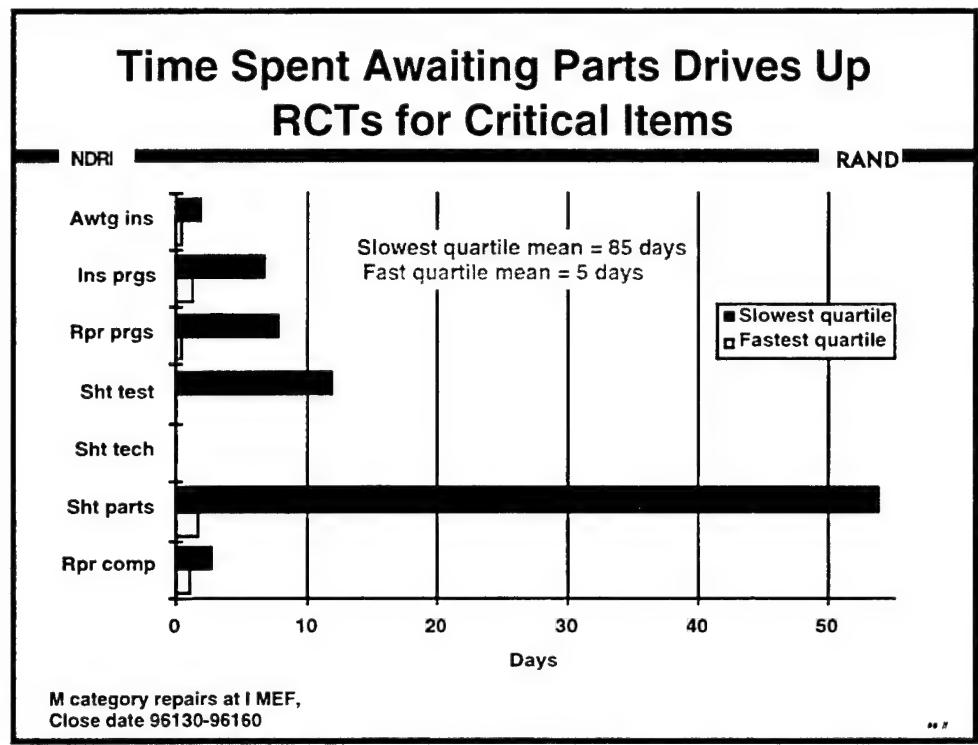
This and the next chart present an illustrative analysis of M-category RCTs and what tends to drive them, based on a specialized data collection from 1st FSSG, I MEF.

For this analysis we analyzed a small subset of all M-category repairs, those executed at the 1 FSSG, with EROs closing between 96130 and 96160. We wished to examine the delays involved in each repair action and for technical reasons were limited to this small population.⁸

This chart shows RCT for these M-category repairs. Note that again times tend to be long and highly variable, even for these critical items: the 50th, 75th, and 95th percentiles are about 20, 40, and 110 days,

⁸The archived MIMMS database does not retain the detailed status information on an ERO that is entered during the course of the repair and is kept in the local MIMMS system for the duration of the repair. Through the support of the 1 FSSG, we obtained information on all EROs at the 1 FSSG that were open as of 96160. We later obtained the archived database from MDAC for all EROs closing in FY96 (including those from 1 FSSG that were open as of 96160). By combining the two databases, we could get detailed status histories for some EROs, but only those that were within 30 days of closing as of 96160.

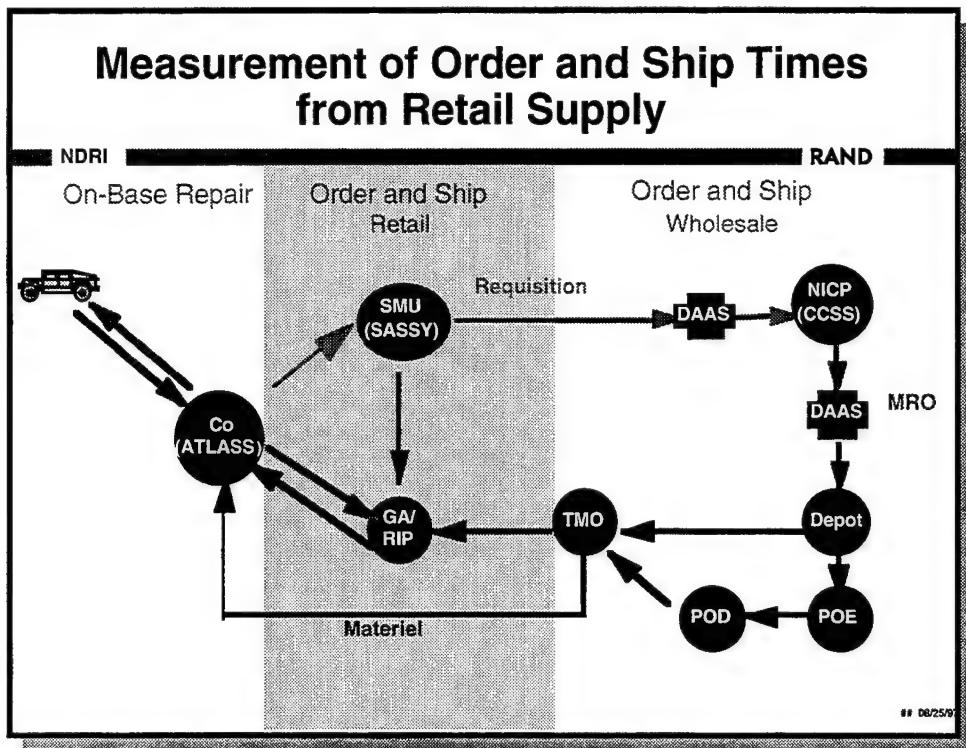
respectively. Note that we also include the 25th percentile time of eight days, signifying that one-quarter of all M-category repairs were completed in eight days or less.



This chart presents some evidence on the drivers of length and variability of RCTs. It does so by focusing on the fastest and slowest of the M-category repairs and examining in particular their status histories. In the above chart, the vertical axis represents the separate status typical repairs go through (awaiting inspection, repair progresses, etc.). The x-axis signifies the time spent in each status on average for two quartiles of M-category repairs: the fastest 25 percent and the slowest 25 percent.

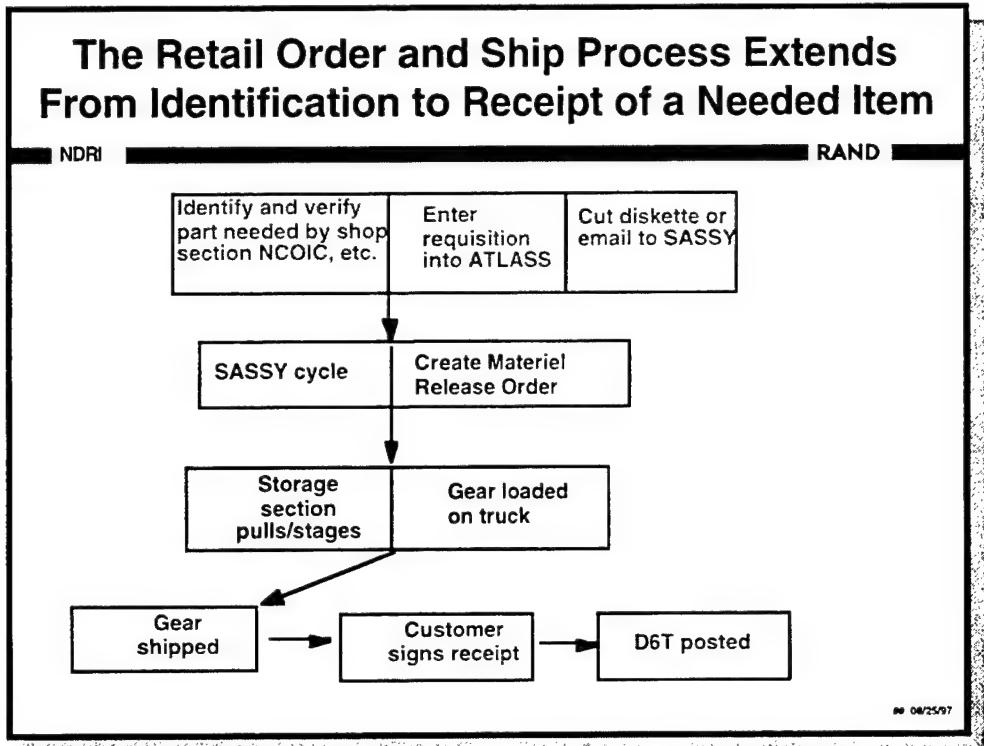
Note that the slowest quartile of repairs takes, on average, 17 times as long to complete as the fastest quartile. What accounts for that large difference? As the chart shows, it is not wrench-turning, or "value-added," time. The difference in "repair progresses" (status code 12) times is about seven days on average, far less than the 80-day difference. Nor do shortages in space or technician availability account for the difference. Overwhelmingly, the slowest M-category repairs are driven by unavailability of parts.⁹

⁹The explanations for length and variability will differ by type of repair and will change over time. We have found in other cases, however, that acquisition of repair parts tends to be a prevalent factor in driving poor RCT performance.



In the next section of the briefing we turn to the retail order and ship process, that is, the steps required to requisition and receive parts available from local supplies.

In this analysis, we look at the order and ship (O&S) process for parts actually available on the shelf (that is, we do not examine backorders). The vital, but separate, logistics process of stock determination is responsible for stocking and maintaining parts on the shelf. In future research, we plan to expand our measurements to include the quality of the stockage determination process.



As in the measurement of the repair process, we begin with a simplified laydown to define the retail O&S process. The process begins with the identification of the repair part(s) required, its validation and documentation through varying levels of authority, and then the formal creation of the requisition itself in the Asset Tracking for Logistics and Supply System (ATLASS). Requisitions are passed from ATLASS to the Supported Activities Supply Support System (SASSY) either directly (e.g., through email) or through the "sneaker net" (driving or walking requisition-filled diskettes) on a scheduled basis. At the SASSY Management Unit (SMU), SASSY cycles are run typically on a daily basis (three to five days a week), part availability is determined, high-priority requisitions for backordered items are passed to wholesale supply, and materiel release orders (MROs) are cut for local stocks.

The MROs are printed and distributed to warehouses, where items are retrieved from supply bins and readied for customer pickup or direct delivery. Once received, the item is either delivered directly to the mechanic or put into the layette for the carcass in repair. A

receipt acknowledgment is entered into ATLAST, with a D6T being passed to SASSY to close out the supply record, and the information is passed to MIMMS and the parts receipt is recorded for the mechanic in the next daily progress report.

MIMMS Data Permit Measurement of OST for Orders Filled from Retail Stocks

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- Retail OST information derived from EROSLs of closed ERO database
 - all EROSLs filled in CY96 from EROs closed in that year
- Eliminate backordered items, local purchase, scrounge
- 188K requisitions filled out of stock on shelf at SMU
- Track OST from creation of requisition document to closeout in MIMMS
 - does not capture part identification to document creation time or actual time mechanic receives part

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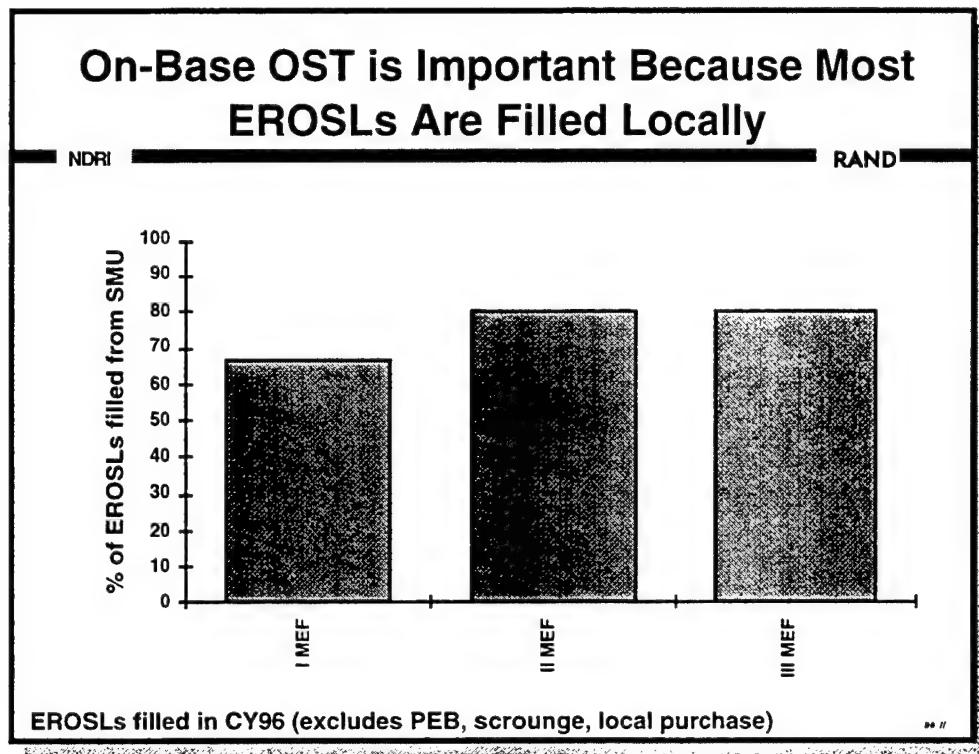
We measured retail OSTs using the same MIMMS database used to baseline RCTs. The archived MIMMS database maintained at MCLB-Albany includes abbreviated histories of all parts used in executing a repair. These records include part used requisition document number, date received or canceled, the source of supply, and latest status of the requisition.

For this analysis, we selected only those requisitions satisfied out of the MEF's Supply Battalion (the General Account for consumables and the Reparable Issue Point for repairables). We excluded all parts that were received via local purchase and scrounge (as well as those obtained from wholesale supply). To focus on the O&S process itself (as opposed to the stockage determination process), we attempted to limit the analysis to items immediately available on the shelf by selecting only requisitions with a "BA" status.¹⁰

¹⁰At the time this analysis was originally performed, archived MIMMS data allowed separation of immediate issue from backordered items. The MIMMS trailer records, which capture snapshot EROSL (ERO shopping list, or parts requisition) histories, show the final status appending to a requisition. A "BA" status signifies immediate issue; an "M8" supply status indicates a backordered item now available

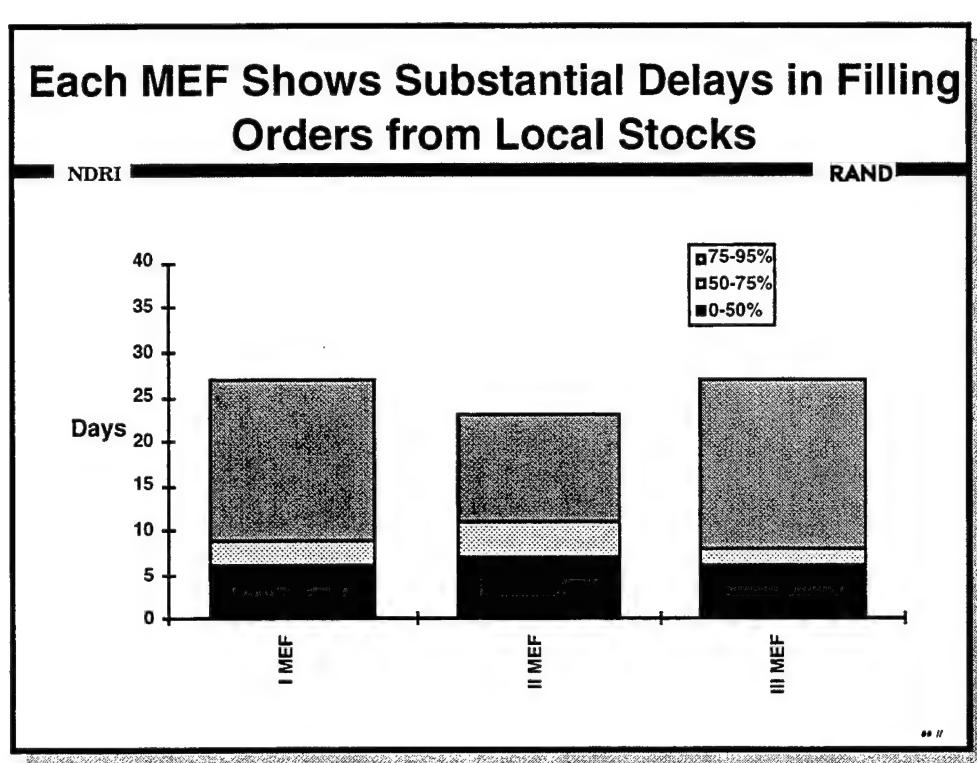
The following charts present examples of order and ship time performance for each MEF in the baseline year (1996). A more complete presentation of OSTs can be found in App. B. In all cases, we present one number: the overall order and ship time. In these data, order and ship time is measured from the document date (created in ATLAST) to the date received as posted in MIMMS (the D6T, also created in ATLAST).

for release. Using these supply statuses, we were able to limit the results presented to non-backordered items only. Some time after this, MIMMS data became unusable for such measurement due to change in procedures by several of the MEF SMUs. Instead of posting a final supply status (BA or M8), the SMU would include a shipping status (AS1 or AS2) that would overwrite the BA or M8 and so eliminate the backorder indicator from the archived MIMMS records.

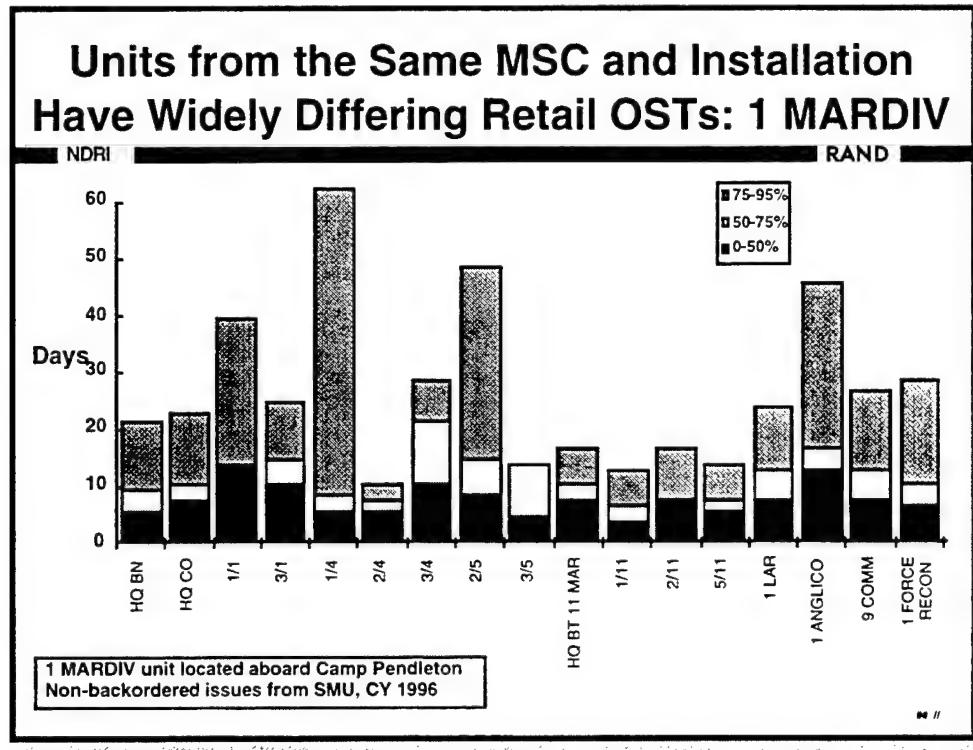


This chart gives some indication of the importance of retail stockage in supporting repair. It shows, by MEF, the percentage of ERO shopping lists (EROSLs) that were filled either by the General Account or the Reparable Issue Point. As the chart shows, this ranges from almost 70 percent to over 80 percent.¹¹ Clearly, retail stocks as "the first line of defense" are vitally important in supporting repair. To the extent that retail O&S is flawed and filled with delays, RCTs can be expected to be substantially affected.

¹¹This chart shows fill rates, i.e., the percentage of all requisitions (minus scrounge, local purchase, or those satisfied out of shop stocks (previously expended bin, or PEB)) that were filled by the SMU.

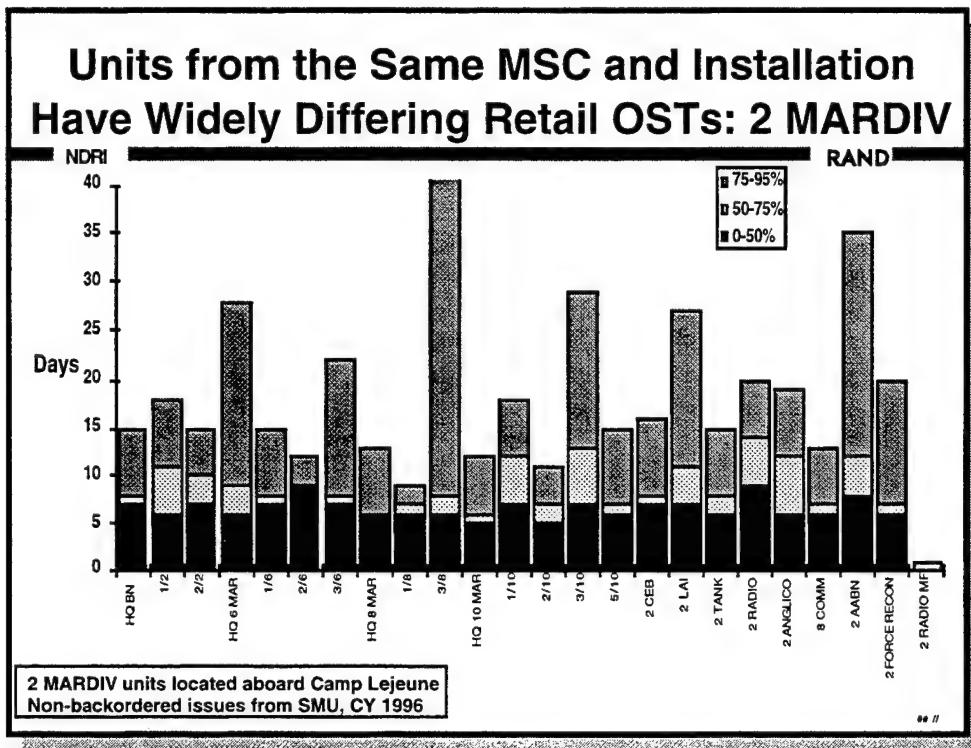


This chart shows aggregate retail OSTs for each active MEF. As one can see, despite some variation across the MEFs, a standard conclusion emerges: retail OSTs—for parts that may be more than a few miles away from the customer—are long and variable. Half take upward of a week to be filled, and many take more than two weeks for the entire O&S process, even though backorders are not included here. It is not clear from these results what accounts for the time incurred; as shown previously, the order and ship process has many steps and many actors, any one of which may be a source of delay; the data available for baseline performance measurement (the MIMMS archives) do not permit more than end-to-end measurement of the O&S process.

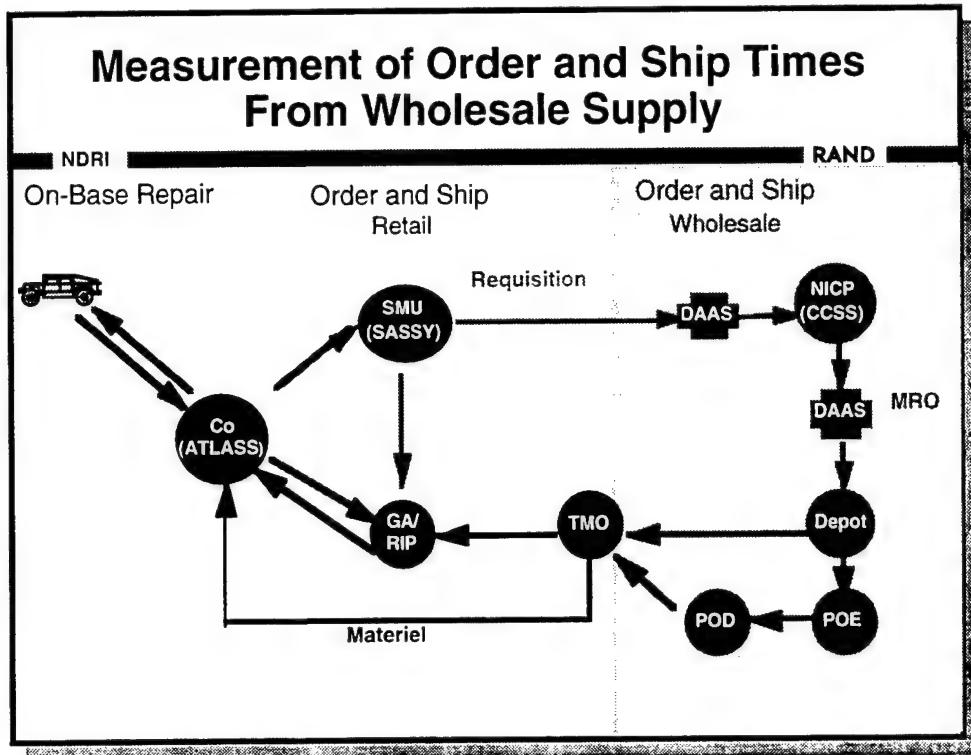


That there is high variability in the order and ship process is demonstrated by this chart. It shows retail OST for major elements of 1 Marine Division located at Camp Pendleton itself (i.e., no units located outside Pendleton are included). Although distances from the source of supply may differ, they typically do not exceed a few miles.

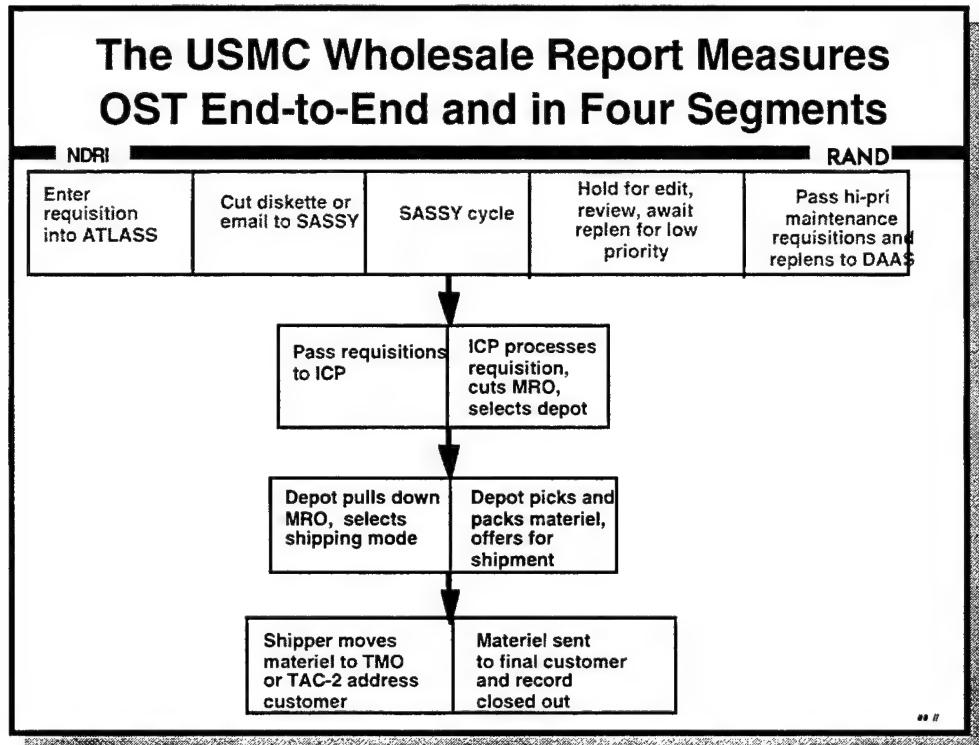
Order and ship times range all over the map for these combat units even though all are close to the supply warehouses. Median times range from 4 to 13 days and 75th percentiles range as well, from 5 to over 20. Assuming that the Supply Battalion does not discriminate levels of service among these units, then sources of delay may need to be sought in unit processes themselves, including requisition validation, processing, and transmission, pickup or delivery, and the close-out process.



This chart repeats the example of the previous one, using 2 Marine Division units located at Camp Lejeune itself. It demonstrates the same delays and high variability across units that were just seen in the Camp Pendleton case. (More complete results for all MSCs in each of the three active MEFs can be found in App. B.)



In this section of the briefing, we investigate order and ship time performance for items requisitioned from the wholesale supply system.



The above chart presents a highly simplified view of the order and ship process for items from wholesale supply.

Several branches are not shown here. Requisitions to wholesale supply can come from the maintenance shop if the item is not stocked and, for high priority requisitions if the item is in zero-balance, and from retail supply for standard (often automated) replenishment requisitions. Requisitions from a maintenance shop follow the same procedure described previously until they reach the SMU. If the item is not available locally (and meets the criteria above), it will be reviewed and approved at the Supply Battalion (based on a financial value threshold) and then be reassigned a new document indicator code (typically as an A3_ or passing action).

All requisitions are then passed via SASSY to the wholesale system, first entering it via the Defense Automated Addressing System (DAAS) computer at Dayton, OH. Requisitions are routed via the DAAS system and made available to the appropriate national inventory control point (NICP) where item managers handle requisitions and manage stockage levels for specific groups of items.

At the NICP, a materiel release order (MRO) is cut, usually automatically; in certain circumstances, a requisition will be delayed for review by the inventory manager.

MROs are then sourced to a DLA supply depot for processing and shipping of the materiel. The MRO will be transmitted via the DAAS system and be entered into the depot's computer system where it will be pulled down, typically at midnight, for processing the next day. Priorities for picking and packing at the depot and the mode of shipment are both largely determined by the requisition's priority and required delivery date. The package will be offered for shipment and then transported to the installation, often to the Traffic Management Office, unless another address is specified. It is then sent to the Supply Battalion or to other customers, or deposited in a marked bin for pickup by customers. When a customer, such as a maintenance shop, receives the package, the same procedure is followed, with a D6T (acknowledgment of receipt) being posted through ATLASS to SASSY. When the SASSY cycle is run, a D6S is posted to DAAS, which completes the requisition history and closes out the record.

The Logistics Response Time Database Permits Measurement of Wholesale OST

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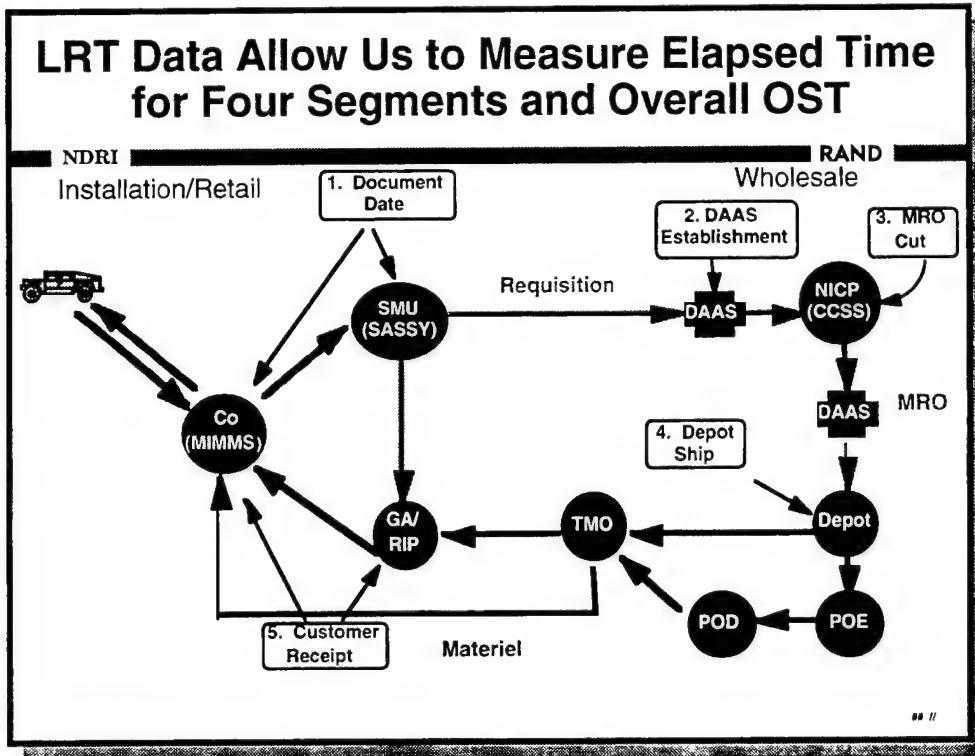
- Maintained by DLA's LRT Process Action Team
- All Marine requisitions of DLA and Navy managed items
- Approximately 1 million requisitions opened in CY96
- Captures many, but not all, major steps of O&S process
 - missing initial receipt on base, intermediate shipment points OCONUS
- Accuracy/validity can be calibrated using MIMMS
- Analysis focuses on non-backordered requisitions

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USMC OSTs for wholesale supply were measured using the archived requisition histories maintained in DLA's Logistics Response Time (LRT) database. This relatively new effort is expanding its coverage of requisition tracking for all managed items of all the Services. In the baseline year, it tracked most time segments for items managed by DLA and the Navy. For the Marine Corps, this includes over one million closed requisitions for CY96 alone.

The LRT database effectively captures major parts of the O&S process, if not all; this will be discussed on the next page. While it is the sole source for detailed information on USMC requisitions on the wholesale system, it is not the only source; the MIMMS database includes limited but relevant information on wholesale OSTs, as will be discussed presently.

Finally, we again limit our analysis to non-backordered requisitions, as our aim at this stage of the analysis is to understand the performance of the order and ship process, i.e., for items available for immediate issue. In later stages of the research, we intend to measure the performance of the stockage determination process.



This chart illustrates which segments of the wholesale OST can be measured with the LRT database. That database has five time stamps that yield four time segments, as well as an overall measure of OST.

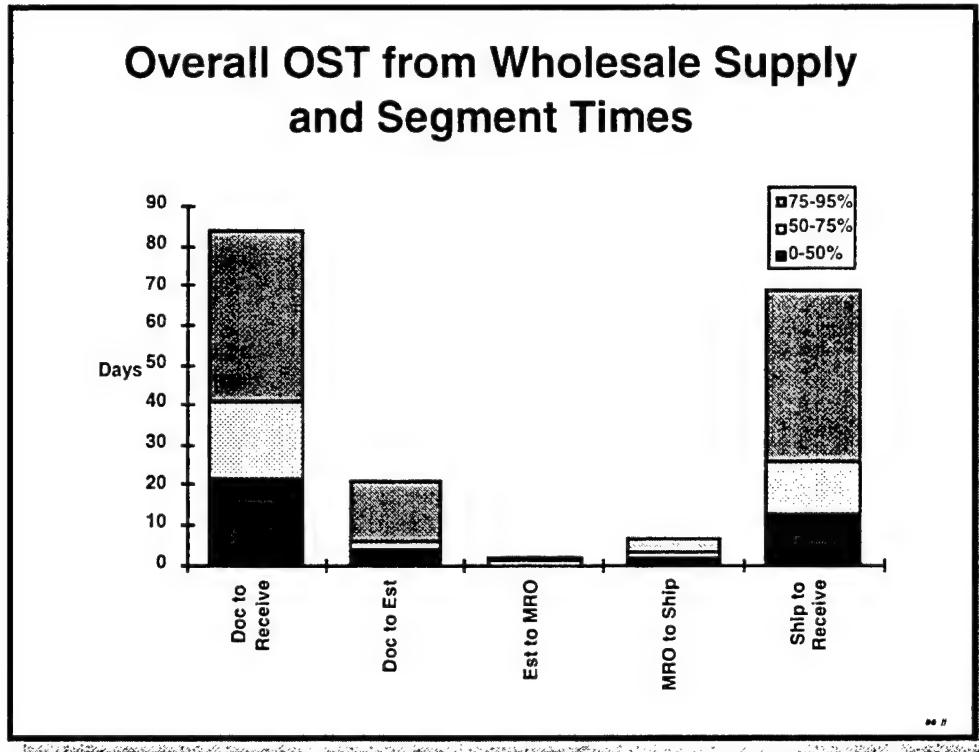
The five dates are:

- the document date (when the requisition was first created), which is extracted from the document number;
- the document establishment (or "birth") date, which is the date the requisition first enters the DAAS system (typically, with an A0_ or A3_ document identifier code);
- the MRO date, when the NICP issues permission to the depot to release the item and that information is transmitted to the appropriate DLA supply depot;
- the depot ship date, at which time the item is picked up by the contracted shipper and leaves the depot; and
- the D6S date, when the received item is posted to the supply account acknowledging receipt by the ultimate customer and the record is closed out.

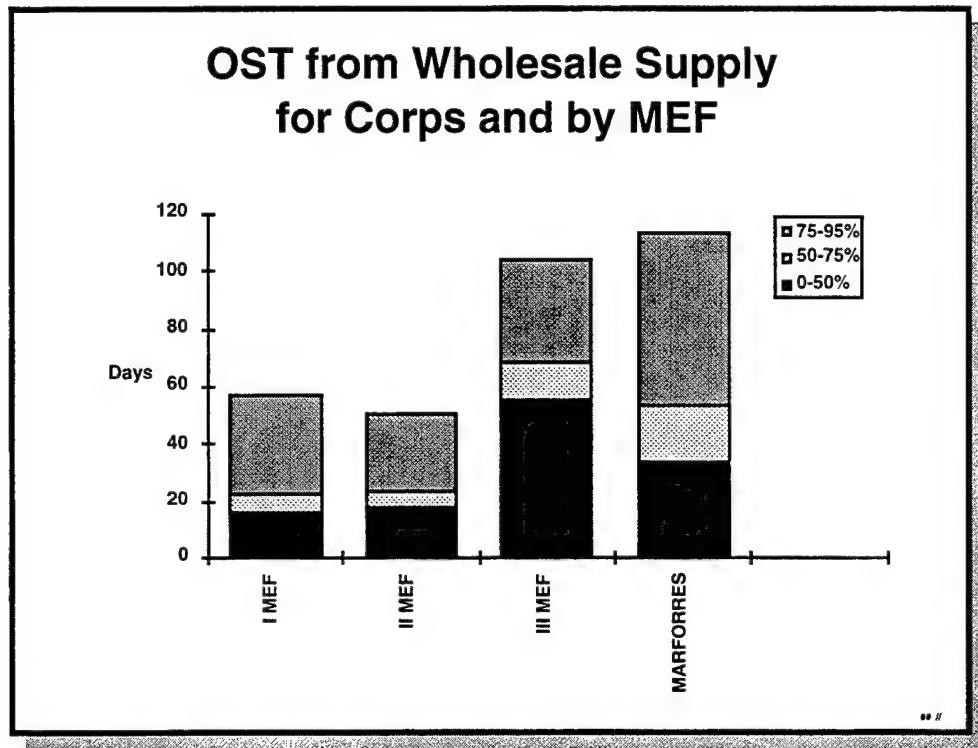
This then yields four time segments, as well as the overall OST:

- docdate to establish: on-base processing times until the requisition is received at the wholesale level;
- establish to MRO: the processing time at the NICP required to issue an MRO;
- MRO to depot ship time: the depot handling time, including picking, packing, and making available to the shipper;
- depot ship to receipt time: the time from when the item leaves the depot, is transported to the installation, and then is distributed to the ultimate customer and the record is closed out.
- docdate to receipt time: the overall order and ship time of the requisition.

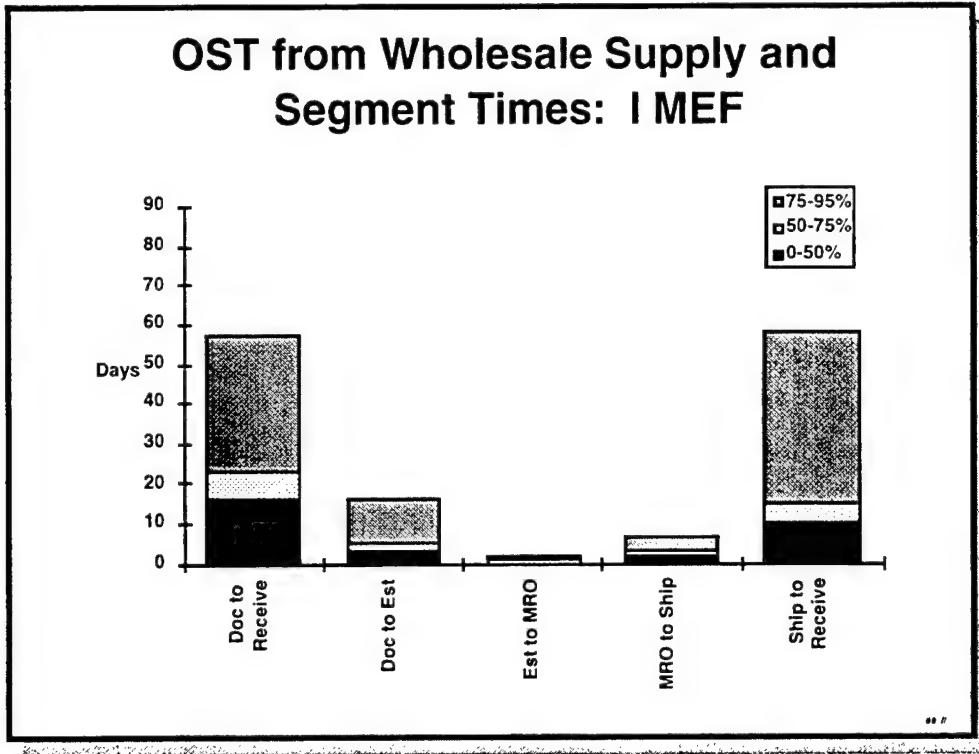
Some time stamps are not yet included in the LRT database of Marine requisition histories. The TK_ acknowledging initial receipt at an installation (say, at TMO) is not yet included, making it difficult to separate transit time from on-base receipt takeup time. Few measurements are captured in the overseas segments of the ship process, such as receipt at the port of embarkation, receipt at the port of debarkation, or intra-theater distribution to units.



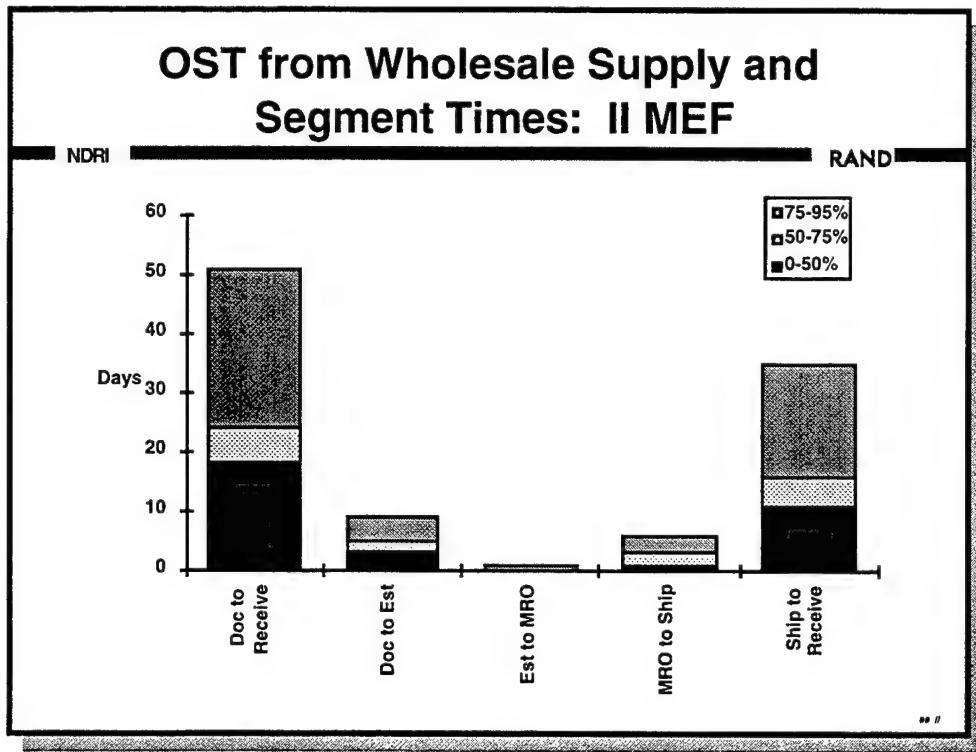
This chart presents overall wholesale OST performance for the USMC as a whole, including all four MEFs. Data are from the LRT and include all requisitions closed in CY96, for all classes of supply managed by DLA and the Navy (again, backorders are excluded). The first bar shows the percentile breakdown for the overall OST, with a median just over 20 days, the 75th percentile at around 40, and the 95th at 85 days. The other bars show similar breakdowns for each of the four segments captured in the LRT. Note that the longest segment by far is the final one, including transit and receipt takeup time. Detailed base year performance statistics for wholesale OST can be found in App. C.



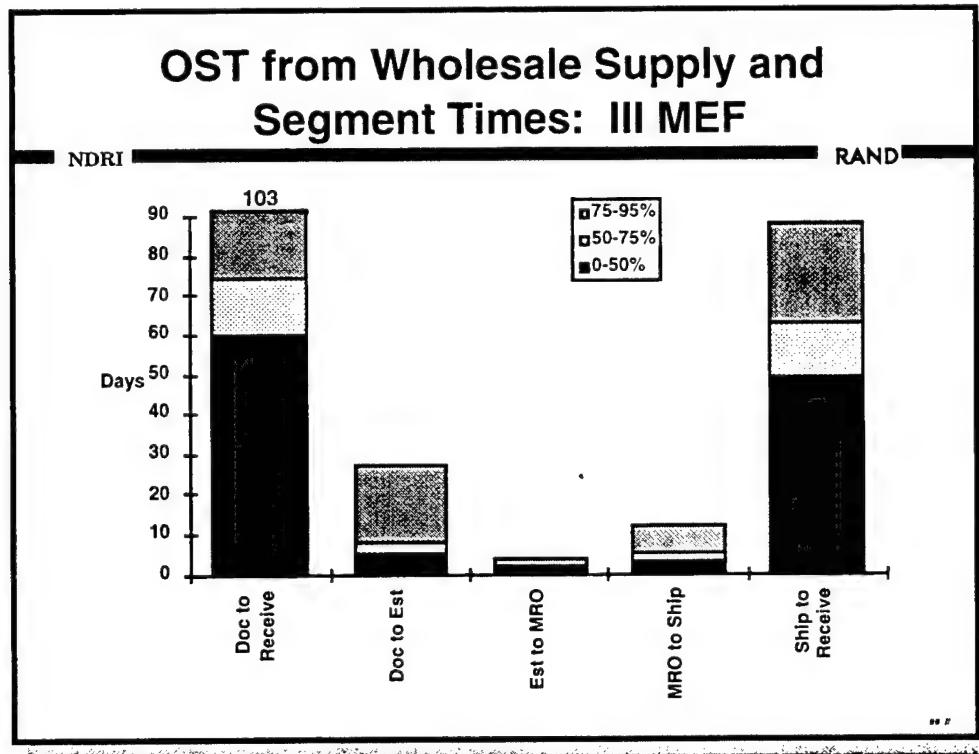
This chart breaks out aggregate OSTs by MEF. Note the differences between CONUS (I and II) and OCONUS (III) MEFs, the latter's long times clearly driven by the need to transport materiel across the Pacific, and also the longer time associated with the Reserve MEF (MARFORRES) requisitions. Note as well the nearly identical OSTs for I and II MEFs: each has a median of 16–18 days, a 75th percentile of just under 25, and a 95th percentile between 50 and 57 days.



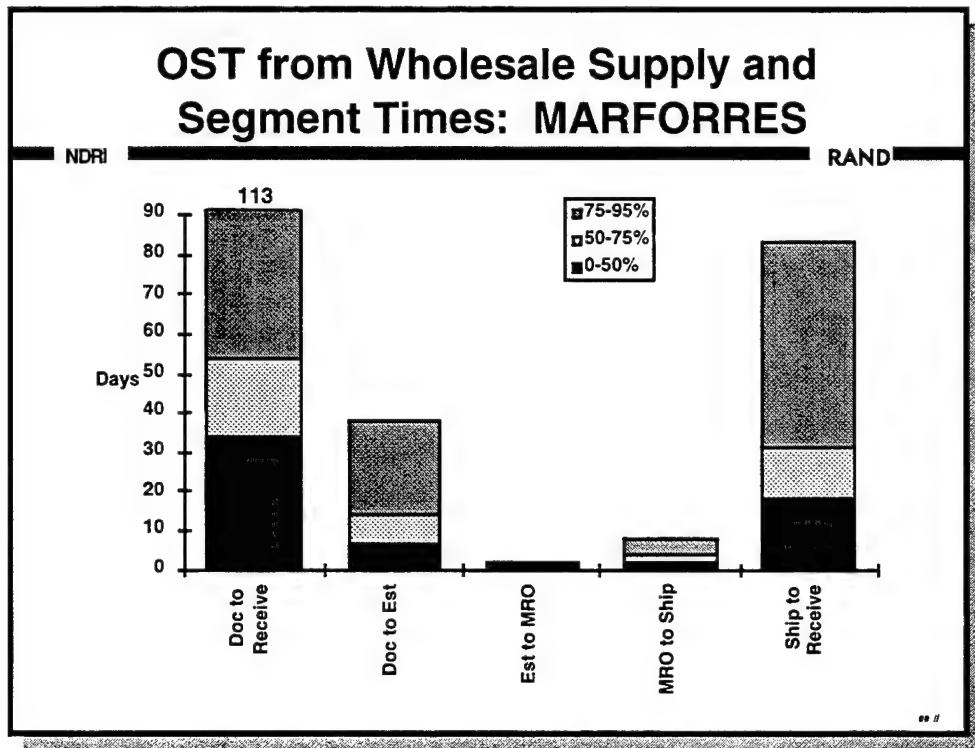
In the next four charts, we present OST breakouts for each MEF. This chart shows the performance of I MEF. The first bar repeats end-to-end performance. The four bars to the right break down OSTs by process segment. Again, we see that ship-to-receive time dominates OST, with requisition processing time on base (doc to est time) as the next driver. Relatively speaking, time spent at the ICP and time in the depot itself are minor contributors to OST.



This chart shows equivalent results for II MEF, at Camp Lejeune, NC. The pattern, and most measures, are very similar to I MEF. The front and back end of the process—which to a considerable extent take place on base—are again the biggest contributors to order and ship time length and variability.

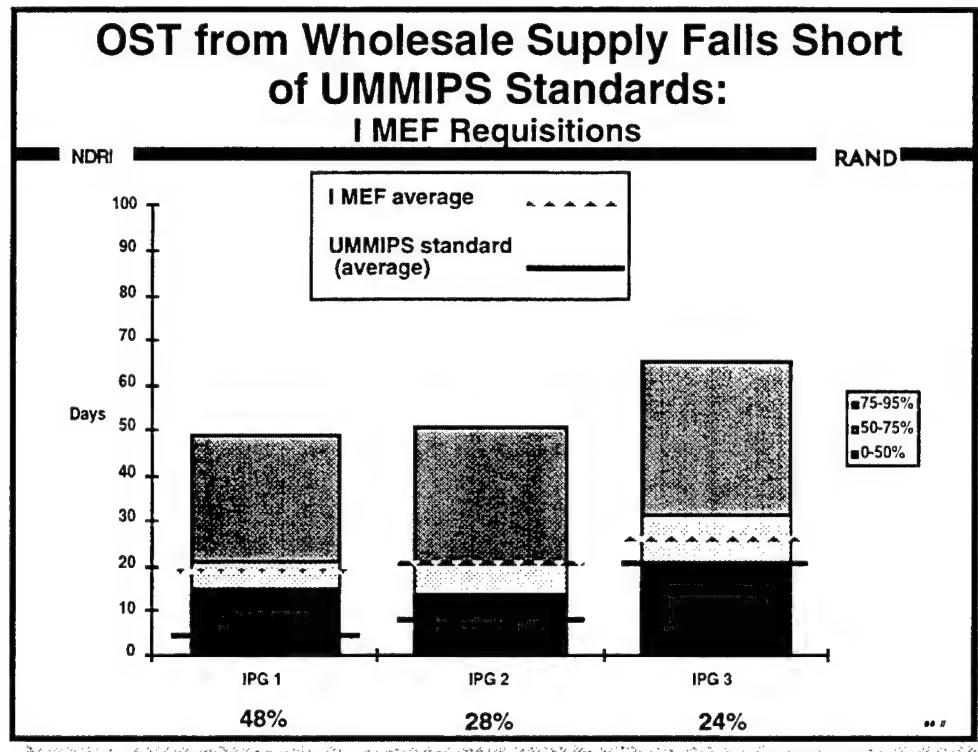


This chart presents similar results for III MEF. The obvious difference from the previous charts for II MEF is the final segment. Clearly, transportation time dominates OSTs for items going to OCONUS forces. Nonetheless, on-base requisition processing time is still a significant driver of OST, somewhat more so than for the other active MEFs.



Finally, we see the same pattern, with more length and variability, reported for the reserve MEF, the MARFORRES. Times are much longer, even than for the OCONUS III MEF, and the amount of variability is much greater (in part due to the interrupted nature of Reserve rotations). Note as well the even greater time required to establish requisitions, in part due to the dispersed nature of Reserve units and, again, the separation of rotations.

In the next series of charts, we take a more analytical view of the O&S process from wholesale supply, in an attempt to understand some of the drivers of long and variable performance.

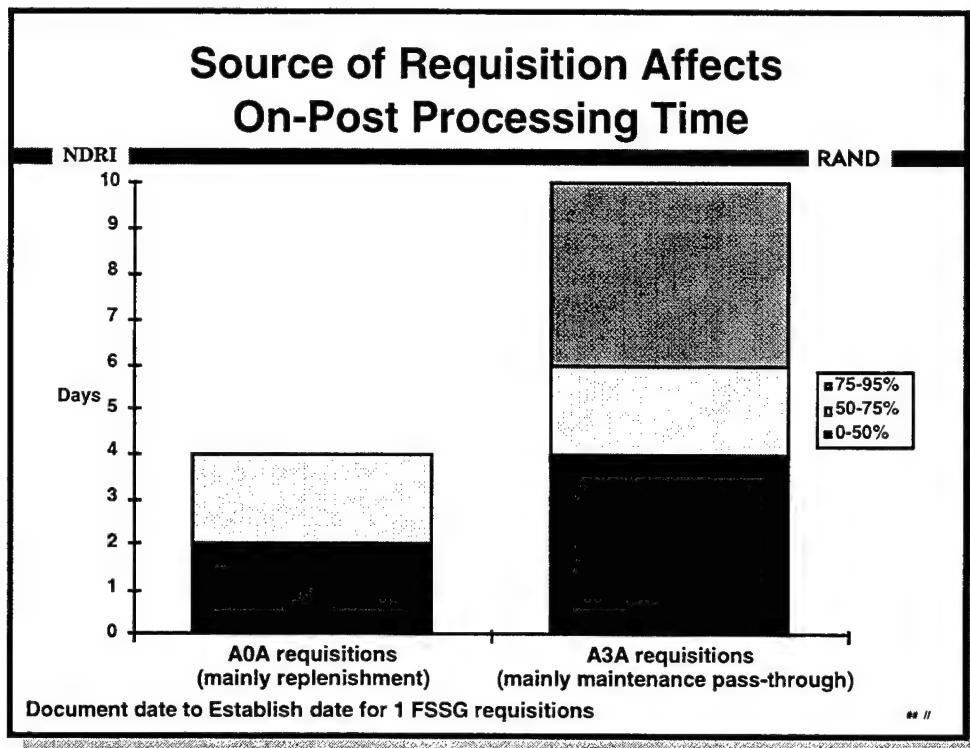


Our diagnostic analysis begins with an examination of the effect of priority on OST. This chart breaks out overall OST, for I MEF requisitions, by issue priority group (IPG). The bars show the OST performance for each IPG. The light line higher on the bar shows current average performance for each IPG. The darker line lower on the bar shows current UMMIPS standards (as of 1993), expressed again in averages.

Next, the chart makes clear that average Marine OSTs fall far short of current UMMIPS standards, which themselves tend to be far more lax than current practices in the commercial sector. For example, high-priority (IPG 1) requisitions take on average about three times the UMMIPS standard of five days.

Note that there is little difference between IPG 1 and IPG 2 (even though UMMIPS standards do call for faster support of IPG 1 than IPG 2, with respective goals of five and nine days). The average OSTs and each percentile are virtually the same.

In the next series of charts, we take a diagnostic look at the separate O&S segments in sequence.



Earlier charts showed that OSTs tended to be driven by ship-to-receive times and by requisition processing time on base, both of which are significantly affected by on-base processes. In this chart, we briefly examine the first segment of the O&S process, the time spent for on-base requisition processing, from the time of document creation through all subsequent reviews and edits, until the requisition is transmitted by SASSY to DAAS.

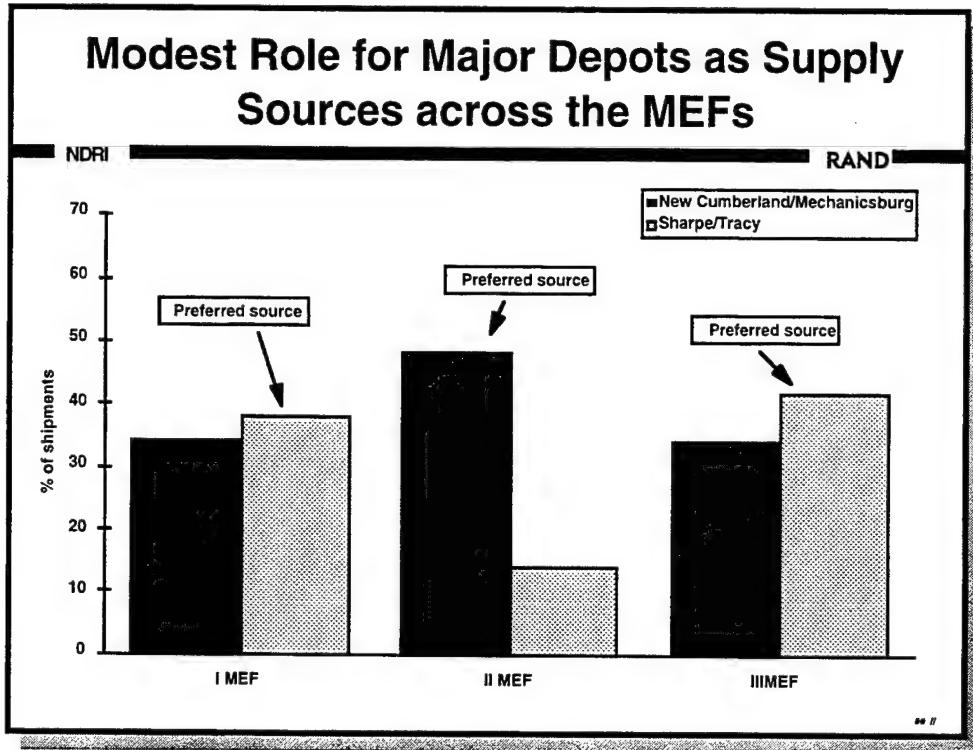
This chart shows the document creation to DAAS establish time for two types of requisitions: A0As (or straightforward requisitions) and A3As (or passing actions on original requisitions). These results are drawn from requisitions issued out of 1 FSSG; similar results would be seen from other organizations as well. A0As are predominantly issued from the Supply Battalion and are typically used for acquiring replenishment stocks for materiel held in Supply Battalion warehouses. A3As come overwhelmingly from maintenance activities and represent pass-throughs for zero-balanced or non-stocked items for parts needed on specific repairs. As we discussed earlier, A3As tend to be higher-priority requisitions for which the decision was

made not to hold up the requisition until the zero-balance could be filled via replenishment.

The bars show that the time for A3As to be processed on-base is roughly twice that for A0As; at the 95th percentile, in fact, it's two and a half times as long.¹² Some preliminary analysis suggests that reviews account for this large difference. A0As for replenishments are mostly automated; A3As pass through various reviews and stoppages, such as approvals at the maintenance activity and then "sneaker net" transmission to the SMU; at the SMU, documents are often delayed to permit the review of high dollar requisitions.

These measurements reveal that the most important requisitions—those directly impacting critical repairs—take longer to leave the installation than lower-priority repairs that are merely needed to fill thinning shelves.

¹²The 95th percentile for A0As is the same as the 75th percentile value.



We next move to the depot processing segment.¹³

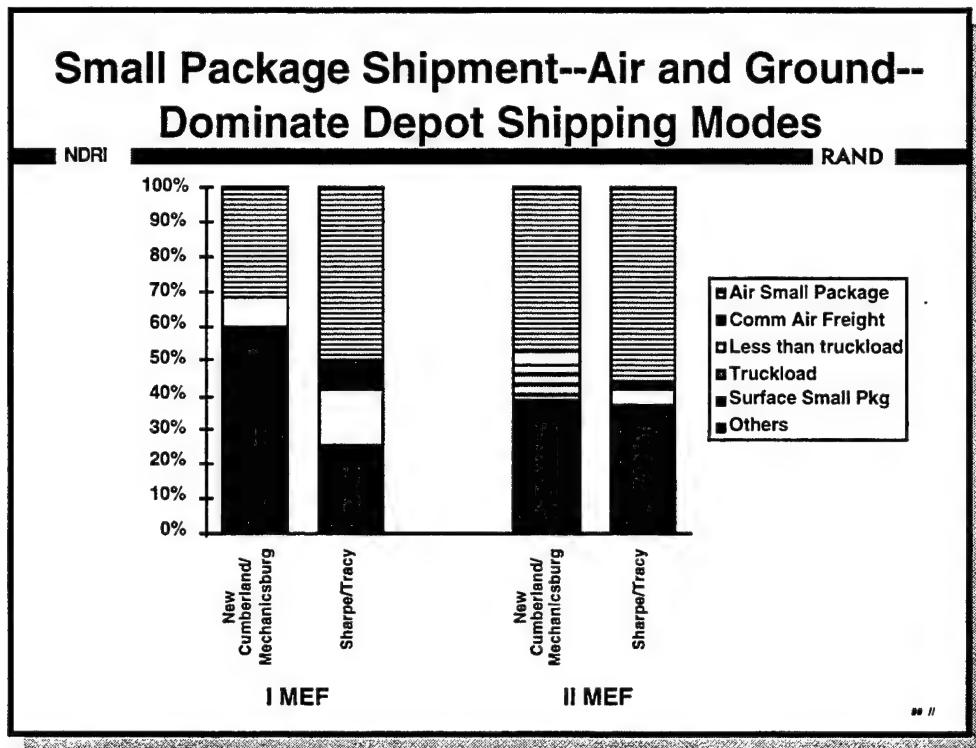
One important factor influencing depot processing and shipping time is which depot the requisition is sourced to. Ideally, better service will tend to come from large, fully modernized depots that are located near the customer. This chart shows how the largest depots are servicing Marine customers.

It shows for requisitions in CY96 the percentage of requisitions filled by each of the major DLA supply depots, broken out by MEF. The chart shows the two "West Coast" (I and III MEFs) and the East Coast (II MEF).

The two major DLA depot complexes, New Cumberland/Mechanicsburg (in Pennsylvania) and Sharpe/Tracy (in central California) dominate the workload. Of the two, however, New Cumberland/Mechanicsburg accounts for more of the filled

¹³We skip the ICP processing segment. As shown before, processing times in that segment for non-backordered items are exceedingly short. Overall, 89 percent of Marine requisitions were not backordered. For the 11 percent that were backordered, the percentile ICP processing times were 35, 82, and 182 (median, 75th, and 95th percentiles).

requisitions. II MEF has about 50 percent of its requisitions filled from this nearby major depot, while I and III MEFs receive less than 40 percent of their materiel from the closest major depot (Sharpe/Tracy, in central California). I and II MEFs receive a substantial level of support from the Pennsylvania depot, whereas relatively little is sent from California to North Carolina and II MEF.



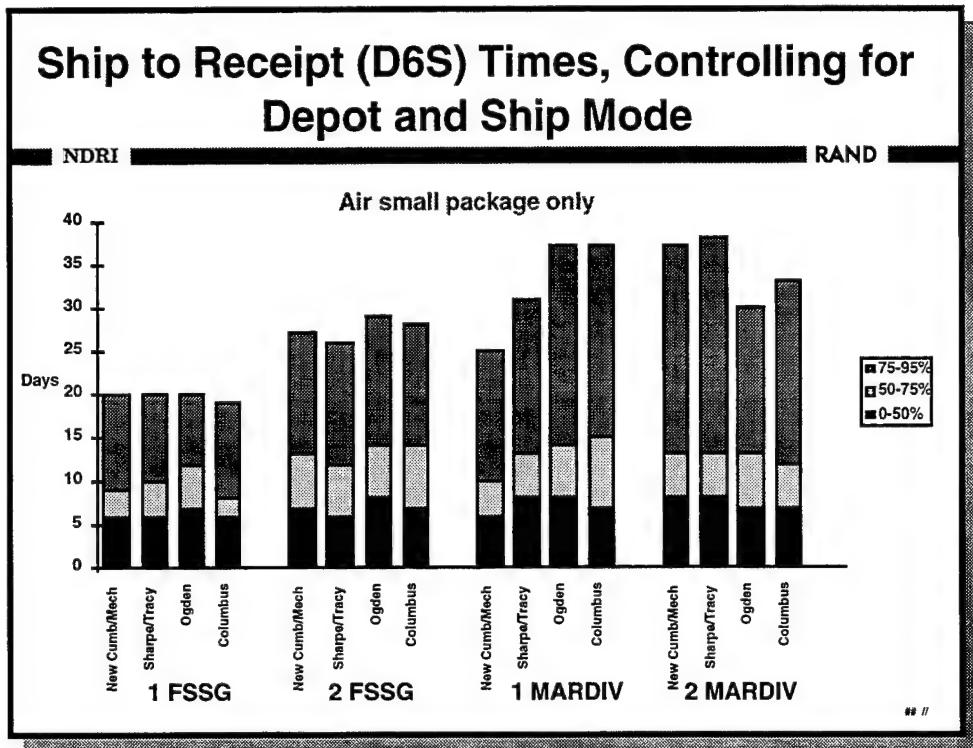
Geographical proximity of major suppliers is important because of the transportation efficiencies it allows, as will be discussed shortly. In the baseline year of 1996, a set of inefficient and expensive methods for shipping supplies were being used, as this chart illustrates.

Part of the depot processing segment involves deciding the requisite shipping mode to the customer. This decision typically is a function of the priority and the required delivery date. High-priority requisitions (IPG 1 and 2) that have a valid RDD (999, 777, NMCS or expected NMCS and the requested days until delivery) typically are assigned faster shipping modes, such as air small package delivery (i.e., FedEx-like service). Lower-priority repairs (IPG 1 and 2 without a valid RDD or IPG 3) are treated as routine and typically delivered through slower modes, such as small package ground (e.g., UPS Ground-Trak), less than truckload (LTL), and unscheduled truckload (TL).

The chart above suggests how much expedited, high-priority shipping service the Marine Corps receives. It shows the distribution of shipping modes to I and II MEF for the two major depots serving

them, as introduced in the previous chart.¹⁴ I and II MEFs get roughly half of their shipments sent expedited (FedEx-like service) and another third small package ground. Obviously the expedited shipments, with one-day transportation, spend much less time in transit than the small package ground, even though all parts may be needed to complete a repair.

¹⁴We exclude III MEF from this part of the presentation because shipping mode information is incomplete. The available data only describe how the item leaves the depot, and not how it arrives at the customer.



While choice of shipping mode will make a substantial difference in times for this segment of the O&S process, further delays may be experienced once the shipment has reached the installation. Unfortunately, the LRT database does not allow us to separate these two segments of the shipping/receipt takeup process. However, we can infer the length of the on-base takeup portion as this chart illustrates. It concentrates solely on high-priority, air small package deliveries (FedEx-type service) which typically have one to two business-day guaranteed delivery.

The chart shows ship-to-receipt times for air small package shipments by major subordinate command and selected depots. Several points are noteworthy. First, shipping and receipt takeup times are remarkably uniform for a given major subordinate command, even across depots (since these are using FedEx-like delivery, this may not be surprising). The second notable aspect is the large variation across major subordinate commands. While median times are roughly similar, there are substantial differences in the 75th and 95th percentiles. The third notable point is the absolute value of times for

this segment. Even in the best case, half the shipping and receipt takeup times exceed five days—sometimes by a lot more. Given guaranteed delivery of one to two days, and even accounting for weekends and holidays, the inferred delays in receipt takeup times once the item has been received on the installation seem quite long.

Frequency of D6S Reporting Varies Considerably by Organization

NDRI

RAND

39% of requisitions shipped had a D6S posted by 9/30/96

MSC	Records with D6S date as % of shipped reqs
1 FSSG	83
1 MARDIV	60
3 MAW	12
2 FSSG	86
2 MARDIV	31
2 MAW	3
3 FSSG	77
3 MARDIV	39
1 MAW	8
4 FSSG	35
4 MARDIV	46
4 MAW	35
MEU (I MEF)	42
MEU (II MEF)	27
MEU (III MEF)	*
MCB PEN	8
MCB LEJ	55
MCB BUTLER	69

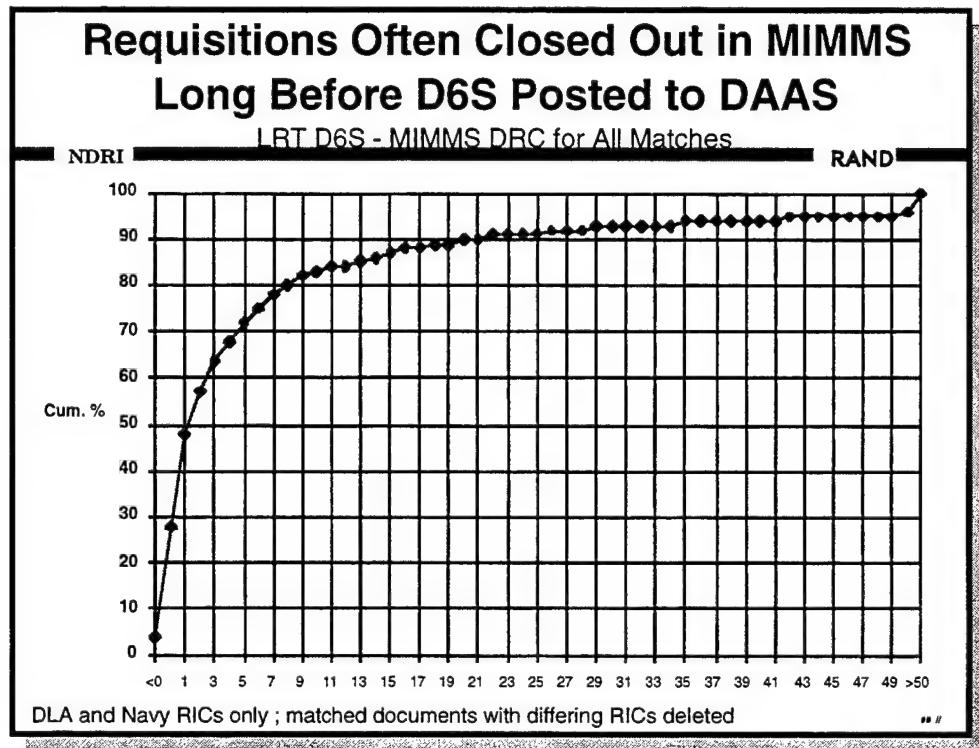
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Performance measurement relies on the quality and comprehensiveness of the data. As the next three charts suggest, there are some serious issues regarding data quality that the Marine Corps may wish to address.

Order and ship time in the LRT database is calculated from beginning to end times, from the document date (in the document itself) and the date the D6S (acknowledging customer receipt) is posted to DAAS. Quite often, however, the D6S is never posted to DAAS and the record is not closed out with a customer acknowledgment. In fact, less than 40 percent of Marine requisitions are ever officially closed out this way in the LRT. The chart above shows how D6S use varies across major USMC organizations. The lines separate the MEFs, with the base operations and MEUs listed below. Some organizations, such as the active Force Service Support Groups, close out most requisitions; Marine divisions, on the other hand, vary substantially in their reporting rate. The air wings, however, barely vary at all: they post

few record closeouts.¹⁵ In some cases, different policies may be in effect; for example there are striking differences in reporting among the three base operations.

¹⁵MAW requisition histories apply only to ground support units, those whose requisitions begin with "M."

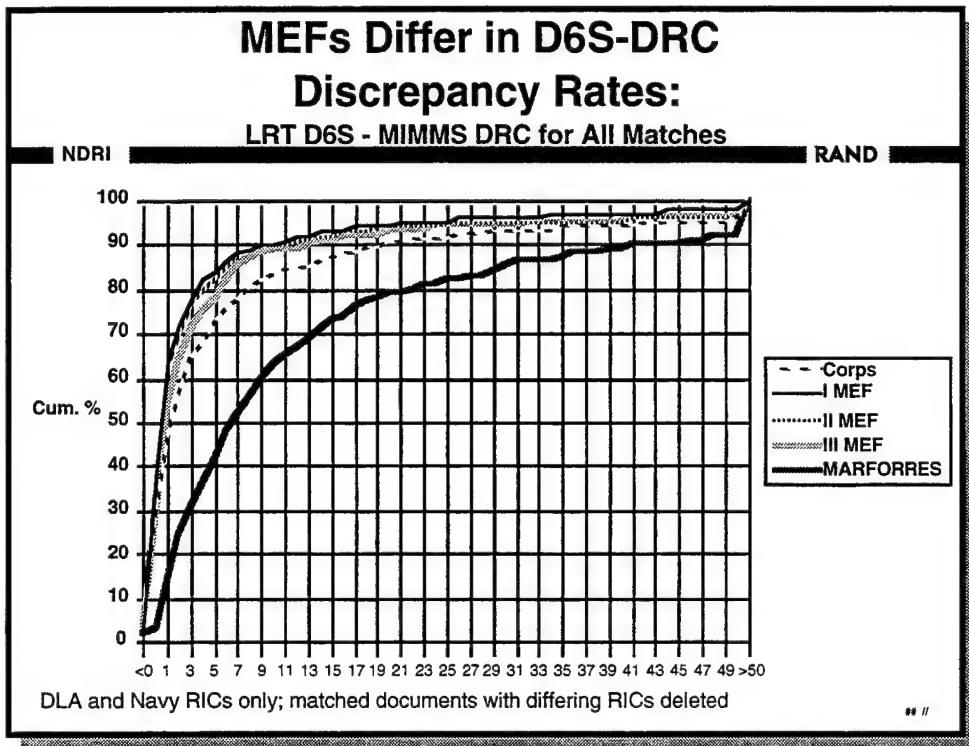


Another concern about data quality regarding D6S posting is *when* the record closure makes it to DAAS. This chart shows that the D6S is often posted long after the customer has received the needed part.

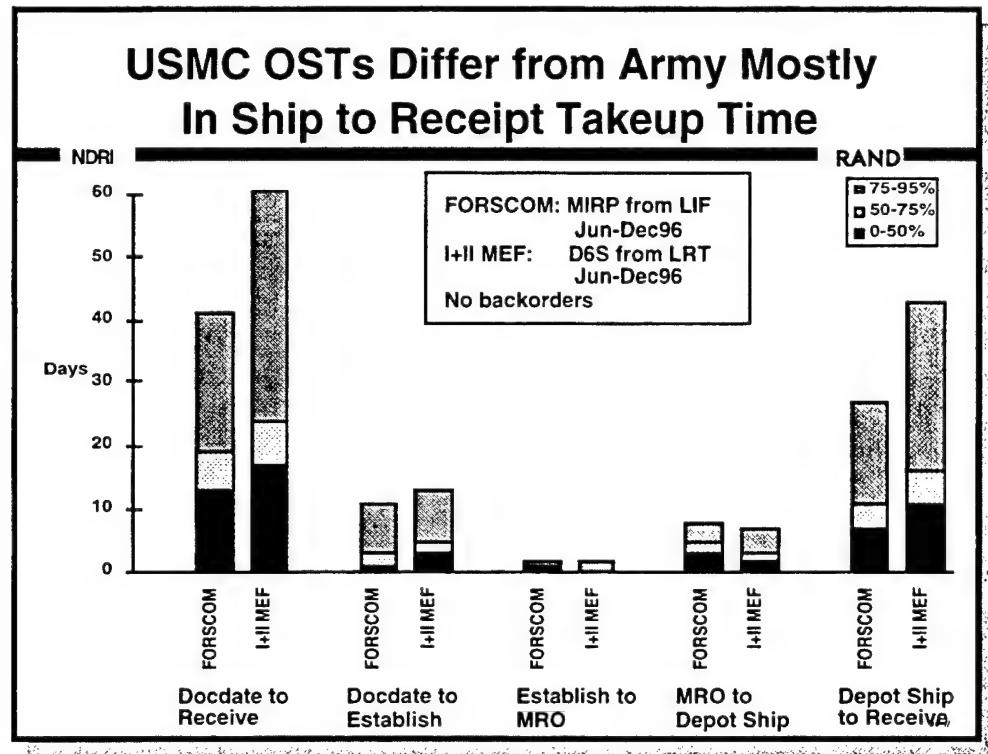
To measure this discrepancy, we “calibrated” the LRT database by comparing it to wholesale requisition data resident in the MIMMS requisition histories. In particular, we used the MIMMS records to evaluate the quality of D6S posting. For matched requisitions, we compared the receipt date in MIMMS to the D6S date in the LRT. The figure above shows the difference between the D6S date and the MIMMS date.¹⁶

¹⁶In certain cases, the MIMMS may show an earlier receipt date if the required part is acquired through some other means, as might happen if delays occur in the receipt of the item from wholesale or if it remained backordered. In those cases, procedures call for changing the source of supply in MIMMS. In a small percentage of the cases of matched requisitions, we noted that indeed the MIMMS record showed a local source of supply for a requisition that also appeared in the LRT. We excluded these cases from our analysis.

The chart gives substantial evidence of discrepancies between when the mechanic apparently received the required part and when that fact was recorded in the LRT. In about 4 percent of the cases, the D6S date actually precedes the MIMMS date. In another 24 percent of the cases, the D6S and MIMMS dates were the same, and in 20 percent of the cases, the D6S followed one day after the MIMMS receipt. However, in many cases, the D6S date occurs well after the MIMMS date. In fact, in 10 percent of the cases, the D6S date is posted three weeks or more later than the MIMMS date.



This chart repeats the result for the entire Marine Corps we saw on the preceding chart and adds cumulative percentage curves for each of the MEFs. We see that most D6S-MIMMS discrepancies are found in the reserve MEF; indeed, one-third of all cases have at least a 14-day difference; 10 percent of the cases for this MEF show a 45+ day difference. While not as extreme, discrepancies occur for the active MEFs as well. Ten percent of those cases show at least an 11-day difference between LRT closeout and MIMMS receipt date. These discrepancies indicate that in many cases OSTs shown in the LRT do not necessarily reflect the time it actually takes for Marines to receive the parts they need.



For more than a year the Army has been aggressively pursuing improving its O&S process from wholesale supply. Since Army operations are in many ways similar to those in the Marine Corps (apart from obvious exceptions, such as the deployed Marine Expeditionary Units), it may be instructive to compare OSTs between the Army and the Marine Corps.

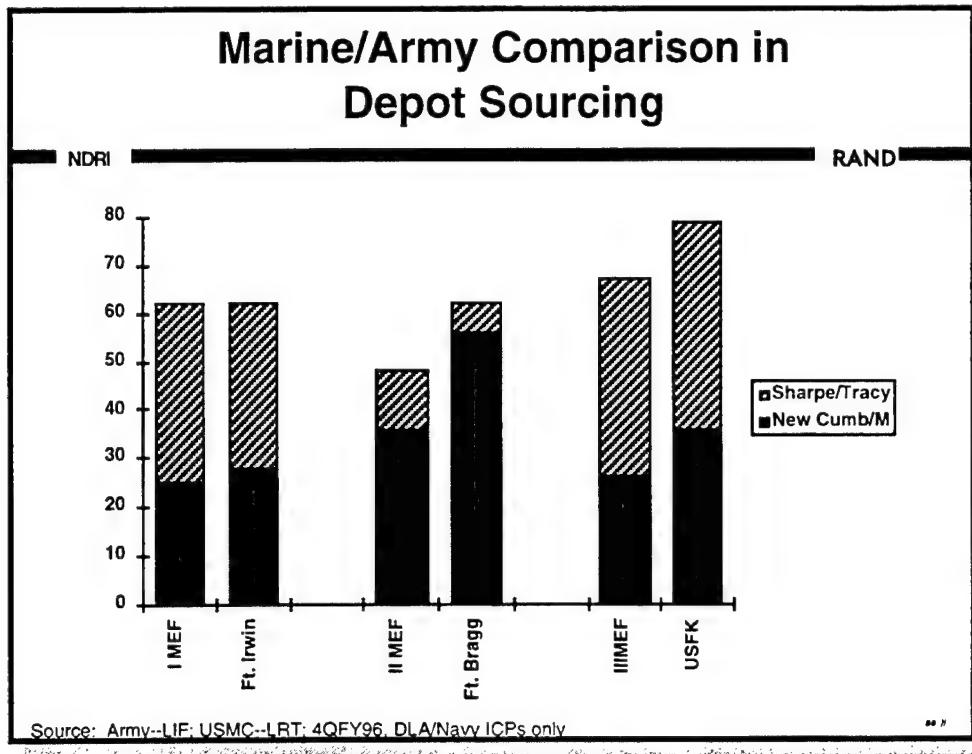
Army performance data are pulled from a database called the Logistics Intelligence File (LIF), similar in many ways to the LRT. The LIF is maintained at the Army's Logistics Support Activity in Huntsville, AL.¹⁷ Some differences exist in the data elements contained in the two databases; of most relevance for our concerns is that the Army data cut off both the front end and back end of the order and ship process. The Army data include only time from the supply support activity (SSA, roughly equivalent to the SASSY Management Unit, or SMU) to the wholesale system and ending back at the SSA. For

¹⁷Army data cover the period June-December 1996 to match wholesale OST data available for the Marine Corps. We have been calling this period in which data were available "calendar year 1996."

non-replenishment requisitions Marine OSTs count time from the final customer, through the SMU, to the wholesale system and then finally back to the ultimate customer.

The chart above compares OSTs both overall and by segment for comparable parts of the Marines and the Army: I and II MEF combined versus Forces Command (FORSCOM) Army units stationed in CONUS. The chart reveals somewhat longer OSTs for the MEFs compared to the Army (exaggerated by the incompatible process measurements discussed above), slightly longer on-base requisition processing time for the Marines, no significant differences in the wholesale segments of the process (ICP and depot processing),¹⁸ and fairly substantial differences between the Army and the Marines in the ship to receipt segment.

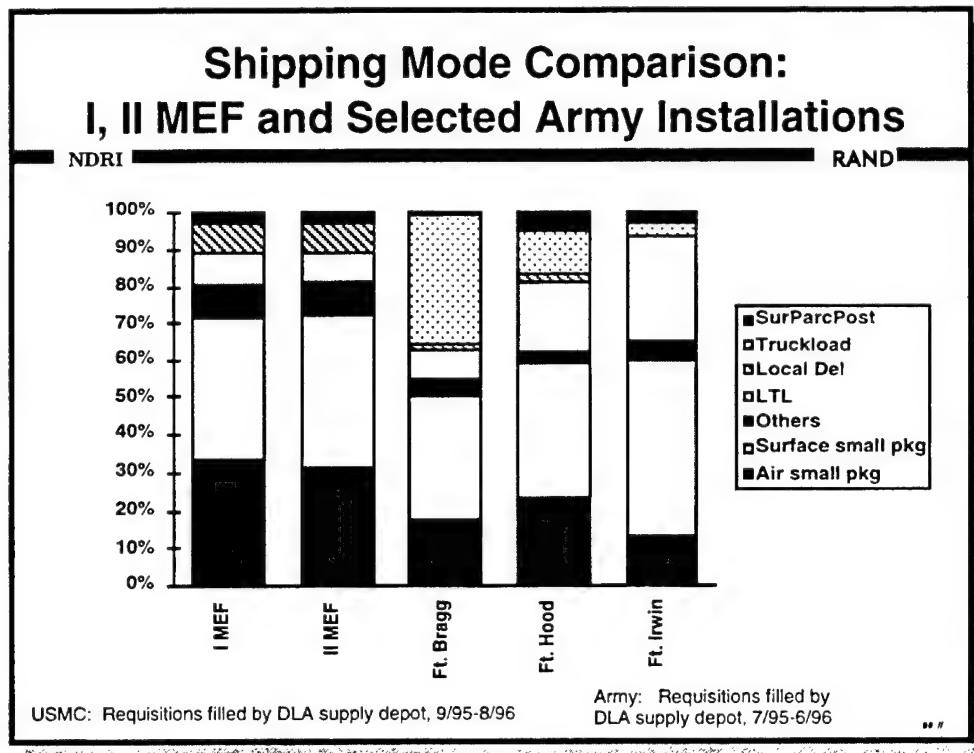
¹⁸The shorter processing time for Marine requisitions at the depot may be accounted for by higher priorities used by the Marines or more consistent use of valid RDDs than the Army used in this time period.



This chart shows how some major Army locations and the active Marine Corps MEFs compare in choice of depots serving their customers. It presents results from 4Q FY96 for the active MEFs and comparable Army installations. It shows the percentage of all requisitions filled for a location by the two major DLA depot complexes of Sharpe/Tracy (California) and New Cumberland/Mechanicsburg (Pennsylvania). As argued before, concentrating support of a customer at a nearby large depot can lead to overall process efficiencies (as shown on the next chart). To a significant extent back in mid-1996, the Marines and the Army often were not routinely supported by local major depots.

I MEF and the Army's Ft. Irwin, near Barstow, CA, received roughly comparable service, with I MEF receiving slightly more support from its nearby major depot, Sharpe/Tracy. III MEF and US Army's forces in Korea (USFK) tended to get similar levels of support from Sharpe/Tracy; USFK tended to get more shipments from the East Coast depot at New Cumberland/Mechanicsburg.

The most distinctive difference between the Marine and Army experience is shown in the middle set of bars, comparing Ft. Bragg, NC, and II MEF at Camp Lejeune, NC. Ft. Bragg received considerably more support from the closest major depot, New Cumberland/ Mechanicsburg, while II MEF less from the East Coast and more from the West Coast than did its nearby Army neighbor.



This chart compares shipping modes used to send materiel to Marine and Army customers. It shows the distribution of modes used during FY96 for the two active CONUS MEFs and three selected Army installations. Two things stand out. One is that the Marines benefit from a higher use of the premium shipping mode, air small package, relative to the Army.¹⁹

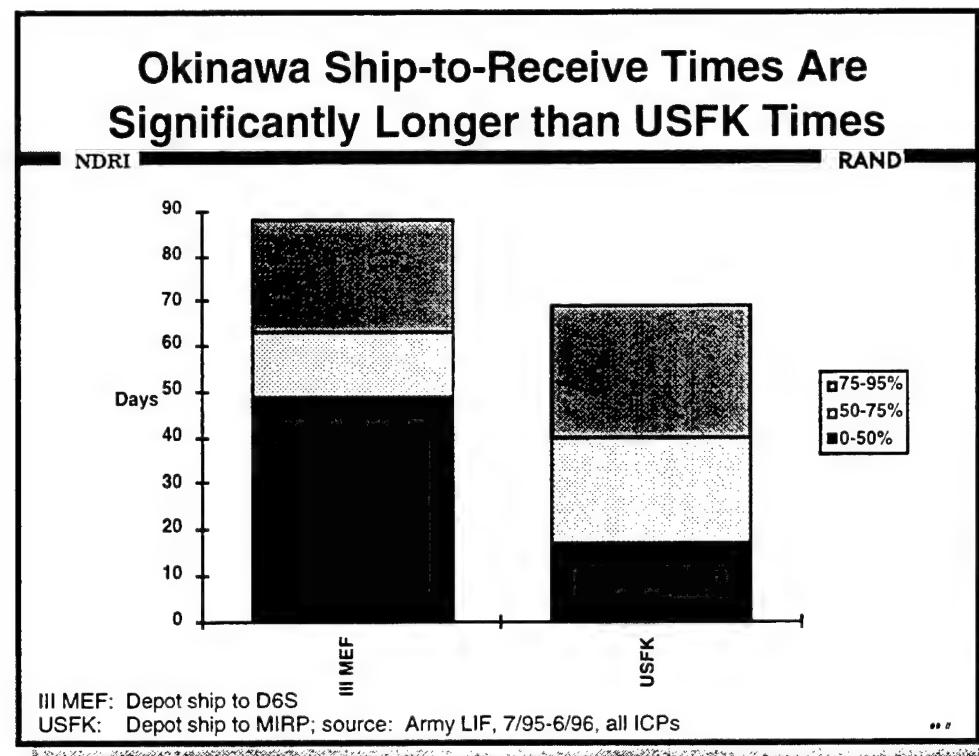
The other notable point relates again to Ft. Bragg. The previous chart showed that Ft. Bragg got unusually high levels of service from a single major depot. This chart shows that Ft. Bragg, while getting little air small package service, received a large portion of materiel by truckload.

The two are related. Ft. Bragg has aggressively worked with DLA to improve the level of service it receives. One result of this effort has

¹⁹This may indicate more consistent use of RDDs on Marine Corps requisitioners. RAND research for the Army has revealed that many in the Army do not know about or understand the role of RDDs in securing higher-priority treatment of requisitions; many believe the use of the priority designator alone is sufficient. Furthermore, in some cases, Army information systems do not support the propagation of RDDs.

been scheduled truck deliveries from the New Cumberland/Mechanicsburg complex. This innovation has both reduced the costs for DLA (by avoiding the use of expensive services like small package carriers) and made deliveries to Ft. Bragg more dependable and faster overall: trucks arrived at an agreed-upon scheduled time and all materiel—not just high-priority items—receive the same fast shipment.²⁰

²⁰Since the time period of the data analyzed here, scheduled trucking arrangements have become extensive for most major Army customers of DLA. Partly as a consequence of Precision Logistics implementation, more Marine customers have started to benefit from scheduled trucking as well.



The final comparison between the Army and the Marines examines the long ship-to-receive times we saw for III MEF. Those times are compared to US Army Forces in Korea (USFK). The chart shows a dramatic difference in the overall time.²¹ The difference in support for these two OCONUS locations is so striking as to demand further exploration and explanation. At this time, we can offer no accounting for the difference, but aim to pursue the issue in follow-on research.

Finally, we close the briefing with some observations.

²¹Although again it should be noted that Army OST ends at the supply support activity and Marine OST ends, sometimes, at maintenance shop receipt.

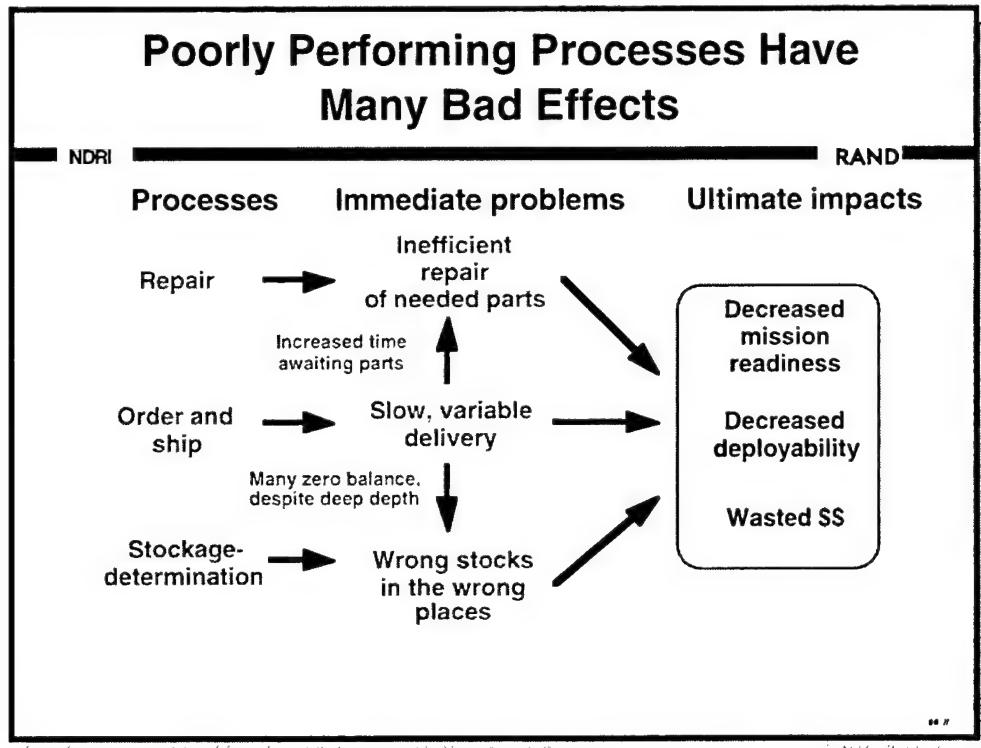
Observations on the Current Performance of Repair and Order & Ship Processes

NDRI

RAND

- Cycle times for all three processes are long and extremely variable
 - RCTs tend to be driven by “waiting” steps and non-value-added activities
 - Retail OST long and highly variable across units
 - Wholesale OSTs tend to be driven by on-base processes
- Because these three processes are linked, performance deficits in one can hurt others

The constant refrain of this analysis is that LRTs are long and variable, as observed in the above chart. Each of the three processes measured here—repair, retail order and ship, and order and ship from wholesale supply—suffered from delays and high variability. While there will always be inherent variability in logistics processes (e.g., overhauling an engine will typically take longer than replacing a cracked rearview mirror), much of the length and variability arises from “non-value-added” activities, or processes that are not well controlled. We see this, for example, in the widely varying retail OSTs among the units of 1 MARDIV and the different receipt takeup times for air small package deliveries across the major subordinate commands.



As shown in the above chart, and as we indicated at the beginning of this document, logistics processes are highly interlinked. Repair depends on the supply of parts coming mostly from retail stocks; sometimes it depends on the availability of repairable items whose availability itself depends on quality of the repair process. That availability follows from stockage determination policies and practices which dictate what should be and is held in stocks, and on the O&S process from wholesale supply, which determines how quickly replenishment stocks can be received (and also influences the depth and breadth of stockage at the retail level).

If any one of these processes performs poorly, the other processes will be affected. Slow repair will reduce the number of serviceable items at the RIP, slowing up other repairs depending on those items and impacting the stockage allocation for these often expensive components. Poor parts identification and bad requisitioning procedures will fill the pipelines with requisitions for unneeded parts, both at the retail and wholesale level, and will absorb space and resources better used by more critical items. Slow OSTs from

wholesale supply will impact RCTs and drive up the level of stockage requirements at the retail level, while narrowing the breadth of items that can be carried. Finally, slow and variable retail OSTs will have a direct link to slow and variable RCTs.

In short, it is important not to look at these critical logistics processes in isolation. They depend on and are linked to each other. An effective logistics response time reduction effort must target all of these processes (and others as well) to achieve the goals the Marine Corps strives for: better, faster, cheaper logistics in support of the warfighter.

Better Performance Measurement/Reporting Is One Key to Precision Logistics

NDRI

RAND

- Multiple metrics (50/75/95) are needed to understand the variable performance of the processes
 - Means alone not very useful as metric
- Baseline measurement critical to create reference point for future improvements
- Continued measurement valuable for monitoring and reporting performance
 - requirement for enhanced reporting systems and more detailed and informative databases

In summary, as emphasized in the above chart and throughout this briefing, both the length and the variability of LRTs are important to understand. We believe that single metrics, like averages, hide as much as they reveal and that true understanding of processes and what drives them requires multiple metrics. In this briefing we offered medians, and 75th and 95th percentiles as a way of capturing the full distribution of OST performance.

Another observation is that while much can be done with current information systems, more could be done with more capable systems to help diagnose the reasons for poor performance. Some of these systems are in the control of the Marine Corps; others are not. MIMMS in particular might be modified to make it a more powerful tool for measuring and analyzing RCT performance. Useful information such as repair statuses, entered painstakingly by Marines, is stripped off before archiving. The archival policy should be modified to permit retention of status histories for each ERO.

The LRT database is continually evolving and its capabilities will expand as all Service-managed items are brought into it. The LRT

database will be a more powerful tool for supporting process improvement if it includes more segments of the O&S process. These include (but are not limited to) receipt of materiel at the installation (TK_), and receipt at the port of embarkation and port of debarkation.

LRT performance measurement and diagnostics are critical parts of a process improvement initiative like Precision Logistics. High-quality and comprehensive databases are needed to support measurement. To answer this need the Marine Corps should strive to collect detailed data on the performance of logistics processes and to make sure that data being entered are correct and complete.

APPENDICES. BASELINE CYCLE TIME MEASURES

This document makes the argument that measurement is one critical part of a logistics process improvement strategy, along with detailed knowledge of process characteristics and a straightforward mechanism to seek improvement and try out new techniques and ideas. To tell that improvements are real, feedback is critical, and the more quantitative the better. But for that feedback to have meaning, there needs to be some benchmark—a baseline—to refer back to and compare the implemented change to.

The main text of this document has laid out in graphical form some elements of a logistics process performance baseline. The following three appendices attempt to present a performance baseline more rigorously, formally, and comprehensively.

Currently, Precision Logistics seeks to improve three critical logistics processes: retail (echelons 2-4) repair cycle, retail order and ship, and order and ship from wholesale supply. Three overarching metrics are needed to assess performance: time, quality, and cost. The initial focus is on the time metric: how long do each of these processes take?

The following three appendices lay out baseline performance in cycle time for each of the three processes. In each case, unless otherwise noted, the base year is calendar year (CY) 1996. Appendix A presents results for retail repair cycle time (RCT); App. B does so for retail (SMU-supplied) order and ship time (OST); App. C does so for wholesale OST. Each appendix begins with a short description of the methodology used, some of the constraints involved, and implications for future performance measurement. Each then presents baseline performance results in tabular form. The tables are organized, insofar as possible, in generally hierarchical form, beginning at the grossest level and then moving to smaller units (e.g., to maintenance shops) or to more diagnostic slices (e.g., time for segments of the process).

APPENDIX A. RETAIL REPAIR CYCLE TIME

DATA SELECTION

The data source for the retail repair cycle time baseline is MIMMS, extracted from the Headquarters MIMMS archive, maintained by MARCORLOGBASE-Albany. While all MIMMS records in that database were obtained by RAND, the following conditions, or parameters, applied:

- Close dates for repair actions (for definition, see below) in CY96
- Echelon of maintenance 2, 3, and 4
- Close status of repair action (see below) = 15 (completed repair)
- Maintenance categories used:
 - Deadlined MARES-reportable PEI
 - Deadlined non-MARES-reportable PEI
 - Maintenance categories D, F, and H for secreps
- For echelon of maintenance 4 (secreps) only repairs done in the Force Service Support Group of the MEF
- TAM (Table of Authorized Materiel) groups (first character of the TAM control number):
 - A: Communications/electronic
 - B: Engineering
 - D: Motor transport
 - E: Ordnance.

The baseline report is in two parts: PEI repair and secrep repair. PEI repair actions are limited to those for critical maintenance, i.e., returning a deadlined end item to usable status. There is a separate report for each MEF, and no overall USMC report. Only FMF results are reported here. The logic of the report (if not the format of

presentation) generally follows that of the USMC retail RCT report first issued November 1997.¹

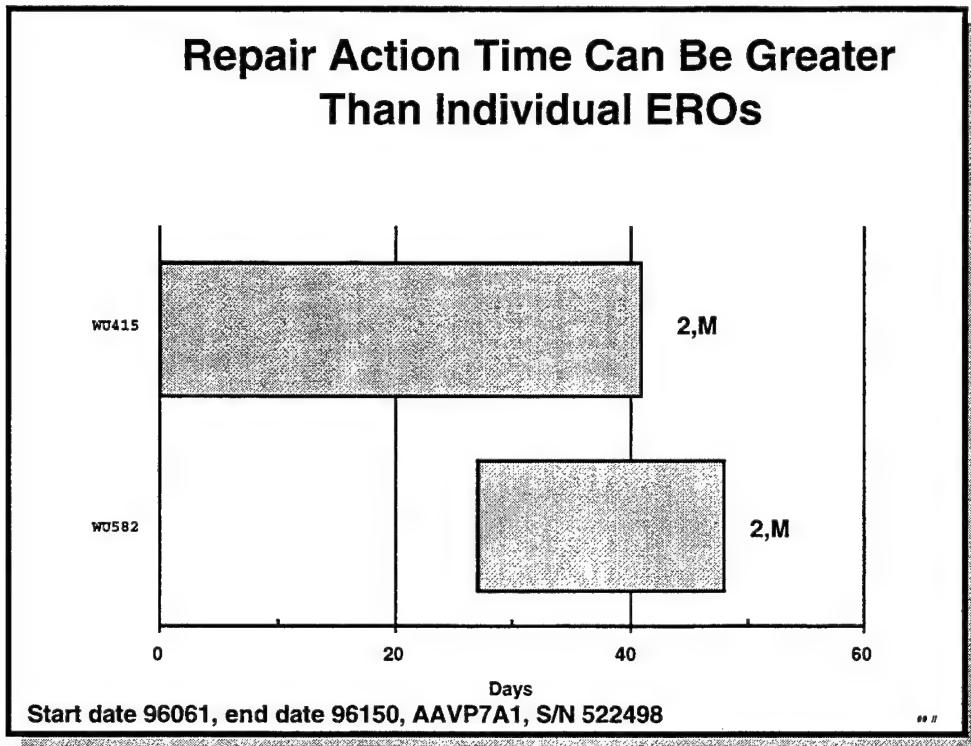
REPORT LOGIC

The logic of the first report (for PEIs) needs some explanation, for it differs from the way RCT is usually thought of in the Marine Corps.

Process performance measurement in Precision Logistics has two aims in aiding performance improvement. One is to capture an end-to-end action; the other is to provide information at the right level and in the right form to the organizations and individuals who own the relevant part of the process. The retail RCT report attempts to meet both those aims.

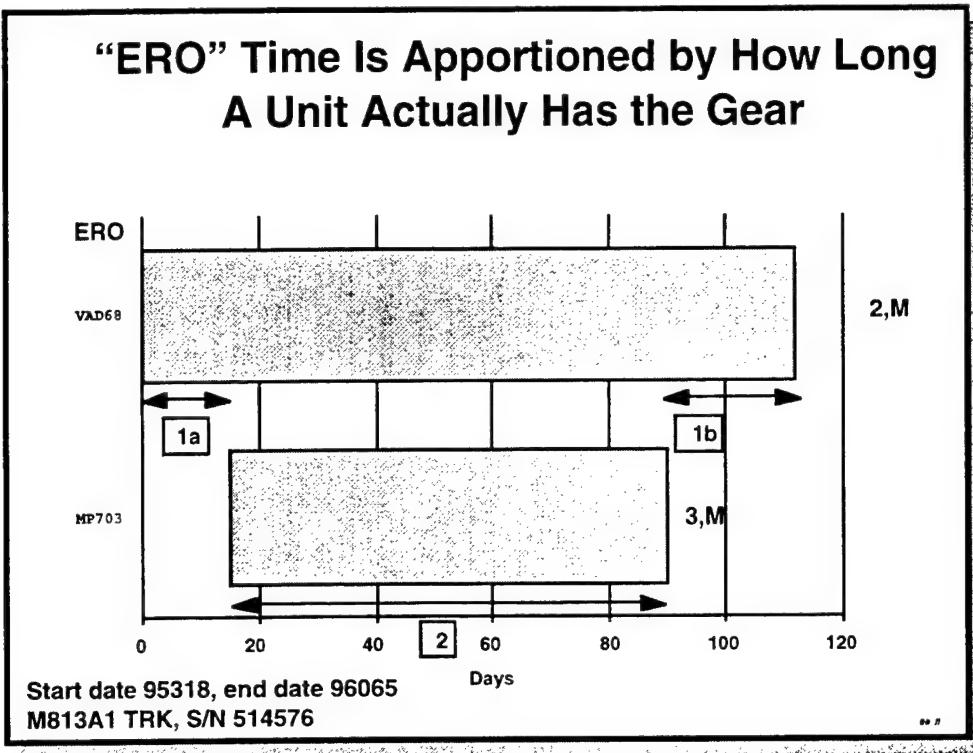
Toward the first aim, the retail RCT report focuses on *repair actions*, instead of *ERO time*. That is, to the extent possible, it focuses on the time from when a piece of equipment is known to be faulty until it is repaired and available to the user again (or as close as we can get to those beginning and end points). We call this time—from identification until final repair complete—a “repair action.” A repair action may be totally contained within a single ERO (in fact, for secreps, we treat EROs and repair actions as the same). However, a repair action can, and often does, stretch over two or more EROs. The repair action time in such cases begins with the date received in shop (DRIS) for the first ERO and ends with the close-date (with close status 15) of the last ERO. For multiple-ERO repair actions, the linking mechanism is obviously critical; we link EROs in a repair action when there is a match by TAMCN, NIIN, serial number of the PEI, and time overlap among the EROs. Consider the following real case, drawn from the MIMMS archive:

¹For differences in methodology between the baseline measures reported here and the recurrent USMC retail RCT report, see below.



The chart above shows two EROs—both echelon 2, category M—for the same PEI (AAVP7A1, with bumper number 522498) overlapped in time. While the first ERO was open for 41 days and the second (which opened up 27 days into the first one) was open for 21 days, we calculate the *repair action time* as 48 days, which is the time from the first DRIS to the final close date. Also, for counting the number of repair actions, we count the above two EROs as one repair action: only one item was repaired.

The second consideration in a repair action is how much time to assign to a particular unit, especially if more than one unit is involved in a repair action (e.g., a second echelon repair unit in the MARDIV evacuates a PEI to the FSSG for third echelon repair). The following chart demonstrates another real world case.



We argue that repair time should only be assigned to a unit for the time when it actually has control over the non-operable equipment. For example, in the case illustrated above, the repair action time for this truck was 112 days, divided between a second echelon (maintenance category M) ERO and a third echelon (category M) ERO. The third echelon repair facility held the truck for 75 days (segment 2), and, while the second echelon ERO was open for the full 112 days, the time it had the truck, independent of third echelon repair, was instead 37 days (15 days at the beginning and 22 days at the end—segments 1a and 1b). The “ERO times” for the two units then are 37 days and 75 days, while the repair action time for the vehicle is 112 days.

What we report, then, is “repair action time” where feasible, and for units doing the repairs we report their “ERO time” as illustrated above. In practical terms, what this means is that at the MEF level we will report repair action times, whereas at any level below MEF (MSC or unit) we report aggregated ERO time, because a repair action can cut across MSCs or units, but not across MEFs.

DEFINING CRITICAL REPAIR ACTIONS

The baseline PEI repair action times are intended to cover only critical repairs, that is, those maintenance actions that bring a deadlined system back into operation. Other maintenance action—on degraded systems, or for general non-critical work—should be excluded.

Unfortunately, there is no simple way to determine what repair action time is on a deadlined system and what time is spent in less critical repair. The problem exists in current USMC MIMMS data and is even worse for the data used to build this 1996 baseline report.

All EROs in the MIMMS system contain maintenance category codes ("catcodes") describing the type of maintenance (e.g., M is for deadlined MARES-reportable systems). However, while the catcode can be changed at any time while the ERO is open, only the final catcode is kept in the MIMMS archive. Thus, an ERO with catcode of M may have included work on a deadlined system for only part of the time the ERO was open.

In the official USMC retail RCT report, developed by RAND, this problem was solved in part by combining catcode information with two other data fields: "catmdays" and "deadlined date." The former captures how long a MARES-reportable system was in deadlined status. The latter, used for both MARES and non-MARES systems, shows the date the PEI became deadlined. This allowed a fairly good approximation of which repair actions were on deadlined PEIs:

- if catmdays was equal to or greater than 90 percent of the repair action time (first DRIS to last close date);
- if the time between deadlined date and final close date was at least 90 percent of the time between first DRIS and final close date, and the catcode associated with that final close date was P or M (i.e., the PEI ended its repair in deadlined status).

MARES-reportable PEIs tend to include catmday values but not deadlined dates (though sometimes they do) and non-MARES-reportable PEI repair actions, while obviously not showing values for catmdays, typically will show a value for deadlined date. The 90 percent value (the deadline time should be at least 90 percent of the

repair action time) was chosen arbitrarily to exclude repairs where a significant time was spent in non-critical work.

While this logic works well for the existing USMC retail RCT report, it does not apply as well to the baseline measures reported here. The former is drawn from MISCO MIMMS data resident at each MEF, data that are purged on a recurrent basis. The baseline measures are based on archived MIMMS data held at MARCORLOGBASE-Albany. Unfortunately, the catmday field is not retained in the archived database, while the deadlined date is. That is, the logic for non-MARES PEI repair actions can be duplicated, but the MARES-reportable PEI repair actions are only consistent across the two methodologies if a deadlined date appears, which it does frequently but not universally.

Fortunately, the use of catmdays, while useful, does not appear to be absolutely critical. To measure the impact of not using catmdays we compared MARES repairs for I MEF for the period July-September 1997. It turns out that the difference is minor:

Category	Number	Average RCT	Median	75th percentile	95th percentile
Catmdays used	2679	33.3	19	40	112
Catmdays not used	2590	34.0	20	42	112

The first row uses the logic laid out above. The second logic includes all repair actions where the final catcode is M. Apparently, not having catmdays available does not greatly bias our estimate of MARES-reportable PEI repair actions.

The same is not true for non-MARES-reportable PEI repair actions if we pay no attention to deadlined date:

Category	Number	Average RCT	Median	75th percentile	95th percentile
Deadlined date used	1281	30.0	21	38	94
Deadlined date not used	2534	36.8	22	49	105

Including all repairs with final catcode P, irrespective of the deadlined date, greatly inflates the number of repair actions and the RCT. Clearly, using the deadlined date, as described above, is important for identifying critical non-MARES-reportable PEI repairs.

This baseline report, then, uses the standard method for calculating non-MARES-reportable RCTs and for MARES-reportables includes all repair actions that have a final catcode of M.

REPORT STRUCTURE

There are reports for each MEF divided into PEI and secrep repair, presented in tabular form. Each table uses generally the same format. Results are presented in terms of numbers in each case (e.g., number of repairs for the MEF), average repair cycle time for this case, and percentiles to show the distribution of repair times: median, 75th percentile, and 95th percentile. The records of the table are organized generally in a descending hierarchy.

PEI Report

The PEI report first shows overall MEF repair action times for the baseline period, then reports at the MEF level for each TAM group, then by maintenance category (M or P). After that it shows ERO time at the MEF level by echelon of maintenance (note that this is "ERO time" and not "repair action time" because a repair action can and often does cross echelons of maintenance but never crosses MEFs, TAM, or maintenance category as we have selected them).

Next the table reports at a finer level of disaggregation.² Here “ERO times” are being reported instead of repair action times, as a repair action may go across MSCs (e.g., a repair started in the division may end in the FSSG). The same structure is used here as for the MEF:

- MSC
- MSC and TAM group
- MSC and maintenance category
- MSC and echelon of maintenance

Finally, ERO times are shown by individual unit performing the repair (shown by UAC and unit name). No further disaggregation is done at this level.

Secrep Report

Secrep repair is reported only at echelon of maintenance 4 and at the FSSG, most typically at the General Support Maintenance Company. While secrep repairs are sometimes reported using echelon 3 and another MSC, this report will be limited to that echelon and MSC; also, only maintenance categories D, F, and H are considered.

Since repairs for secreps are typically accomplished on a single ERO (and in any case, secreps are not generally tracked by serial number, making linking across EROs impossible), the logic of secrep repair action time is simple: it is the same as ERO time, with each secrep/echelon 4 ERO being treated as a single unique repair. Repair times are broken out in this report as follows:

- Overall FSSG RCT
- RCT by maintenance category
- RCT by unit
- RCT by unit and maintenance category
- RCT by unit and shop
- RCT by unit, shop, and subshop.

² In this case, and in all cases, a level is reported if there are at least 50 cases in the reporting period that meet the criteria.

PEI REPAIR CYCLE TIME FOR I MEF -- CALENDAR YEAR 1996						
Label	TAMC	ECHMNT	MNTCAT	MSC	UAC	UNIT
I MEF overall RCT						
RCT by TAMC	A					
	B					
	D					
	E					
RCT by MNTCAT	MARES					
	Non-MARES					
RCT by ECHMNT	2					
	3					
RCT by MSC	1:CA <td></td> <td></td> <td></td> <td></td> <td></td>					
	1:FSSG					
	1:MDIV					
	1:MEU					
	1:SRIG					
RCT by TAMC	3:MAW					
RCT by MSC TAMC	A					
	B					
	D					
	E					
RCT by TAMC	A					
	B					
	D					
	E					
RCT by MSC	A					
	B					
	D					
	E					
RCT by MNTCAT	A					
	B					
	D					
	E					
RCT by ECHMNT	A					
	B					
	D					
	E					
RCT by TAMC	A					
	B					
	D					
	E					
RCT by MSC	A					
	B					
	D					
	E					
RCT by MNTCAT	A					
	B					
	D					
	E					
RCT by ECHMNT	A					
	B					
	D					
	E					
RCT by TAMC	A					
	B					
	D					
	E					
RCT by MSC	A					
	B					
	D					
	E					
RCT by MNTCAT	A					
	B					
	D					
	E					
RCT by ECHMNT	A					
	B					
	D					
	E					
RCT by TAMC	A					
	B					
	D					
	E					
RCT by MSC	A					
	B					
	D					
	E					
RCT by MNTCAT	A					
	B					
	D					
	E					
RCT by ECHMNT	A					
	B					
	D					
	E					
RCT by TAMC	A					
	B					
	D					
	E					
RCT by MSC	A					
	B					
	D					
	E					
RCT by MNTCAT	A					
	B					
	D					
	E					
RCT by ECHMNT	A					
	B					
	D					
	E					
RCT by TAMC	A					
	B					
	D					
	E					
RCT by MSC	A					
	B					
	D					
	E					
RCT by MNTCAT	A					
	B					
	D					
	E					
RCT by ECHMNT	A					
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RCT by TAMC	A					
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	E					
RCT by MSC	A					
	B					
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	E					
RCT by MNTCAT	A					
	B					
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	E					
RCT by ECHMNT	A					
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RCT by TAMC	A					
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RCT by MSC	A					
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RCT by MNTCAT	A					
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RCT by ECHMNT	A					
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RCT by TAMC	A					
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RCT by MSC	A					
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	E					
RCT by MNTCAT	A					
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RCT by ECHMNT	A					
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RCT by TAMC	A					
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RCT by ECHMNT	A					
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RCT by TAMC	A					
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RCT by ECHMNT	A					
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RCT by TAMC	A					
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	E					
RCT by MSC	A					
	B					
	D					
	E					
RCT by MNTCAT	A					
	B					
	D					
	E					
RCT by ECHMNT	A					
	B					
	D					
	E					
RCT by TAMC	A					
	B					
	D					
	E					
RCT by MSC	A					
	B					

Label	TAMC	ECHMINT	MNTCAT	MSC	UAC	UNIT	NUMBER	Avg	50%	75%	95%
RCT by MSC TAMC											
D			1:MDIV				2250	40.5	27	56	118
E			1:MDIV				2786	29.6	16	36	115
A			1:MEU				78	50.9	30.5	59	193
B			1:MEU				68	39.7	19.5	41	142
D			1:MEU				76	25.1	17	39	79
E			1:MEU				96	49.3	28	79	132
A			1:SRIG				17	161.6	79	90	662
B			1:SRIG				32	24	9.5	20	83
D			1:SRIG				85	29	17	40	98
E			1:SRIG				5	17.8	22	30	32
A			3:MAW				452	48.8	20	45.5	168
B			3:MAW				574	33	15	43	114
D			3:MAW				522	45.2	30	63	144
E			3:MAW				119	48.3	31	71	142
RCT by MSC MNTCAT											
MARES	1:CAX						319	15.2	13	20	38
Non-MARES	1:CAX						42	13.8	10	18	39
MARES	1:FSSG						3871	34.6	19	43	119
Non-MARES	1:FSSG						2246	32.8	20	39	112
MARES	1:MDIV						4580	35.7	21	48	115
Non-MARES	1:MDIV						2279	34.9	19	44	128
MARES	1:MEU						214	38.7	22	45	164
Non-MARES	1:MEU						104	48.4	27.5	70	142
MARES	1:SRIG						115	44	17	49	105
Non-MARES	1:SRIG						24	42.1	24.5	48	220
MARES	3:MAW						1165	40	22	49	135
Non-MARES	3:MAW						502	47.5	24.5	63	175
RCT by MSC ECHMINT											
2	1:CAX						322	14.8	13	19	38
3	1:CAX						39	16.9	15	23	44
2	1:FSSG						2394	33.2	19	41	116
3	1:FSSG						3723	34.5	20	42	116

Label	TAMC	ECHMNT	MNTCAT	MSC	UAC	UNIT	NUMBER	AVG	50%	75%	95%
RCT by MSC ECHMNT		2		1:MDIV			6701	35.4	21	47	120
		3		1:MDIV			158	34.2	18.5	39	112
		2		1:MEU			171	40.1	22	47	178
		3		1:MEU			147	43.9	24	62	131
		2		1:SRIG			139	43.7	17	49	133
		2		3:MAW			1631	42	22	53	143
		3		3:MAW			36	51.6	33.5	70.5	124
<hr/>											
RCT by UAC		1:CA	M35031	CAX 182			361	15	13	19	38
		1:FSSG	M11020	1 MED			43	27.7	21	33	46
		1:FSSG	M11650	7 MOTORS			233	49.9	22	68	151
		1:FSSG	M21300	7 ESB			275	37.2	21	46	138
		1:FSSG	M28280	7 MOTORS			325	43.4	31	58	145
		1:FSSG	M28290	1 MED			31	27.1	19	41	91
		1:FSSG	M28301	H&S BN			101	51.4	36	73	146
		1:FSSG	M28304	1 FSSG FWD			10	68.8	58	107	165
		1:FSSG	M28310	1 SUP			27	13.3	8	20	37
		1:FSSG	M28321	1 MNT			227	26.8	9	41	103
		1:FSSG	M28324	ELMACO			401	39.5	25	49	130
		1:FSSG	M28325	EMC			466	50.6	27	67	176
		1:FSSG	M28326	MTM			580	28.5	14	42	92
		1:FSSG	M28327	ORD CO			661	27.2	16	29	107
		1:FSSG	M28328	GSM			48	20.4	12.5	26	56
		1:FSSG	M28339	CSSG 1 IX			987	32.2	21	41	100
		1:FSSG	M28349	CSSD 12			95	28.3	14	35	80
		1:FSSG	M28355	CSSD 14 ORG			176	49.6	39.5	76	136
		1:FSSG	M28357	CSSD 16 MIP			213	52.4	22	71	189
		1:FSSG	M28370	1 LSB			77	54.8	29	97	171
		1:FSSG	M28392	CSSD 27			22	35.1	32	50	70
		1:FSSG	M28401	DSU			26	5	3.5	7	18
		1:FSSG	M28403	DSU			158	14.7	11	22	40
		1:FSSG	M28407	SMU			1	2	2	2	2

Label	TAMC	ECH/MINT	MNT/CAT	MSC	UAC	UNIT	NUMBER	Avg	50%	75%	95%
RCT by UAC			1:FSSG	M28409	SMU		173	13.1	8	22	38
			1:FSSG	M28410	SMU		296	14.1	12	22	35
			1:FSSG	M28411	DSU		37	14.2	13	18	37
			1:FSSG	M34014	EEAP CMCAGCC		428	31.8	23	36	99
			1:MDIV	M11001	HQ BN 1 MARDIV		364	39.3	24	51.5	134
			1:MDIV	M11104	HQ CO 1 MAR		98	32.8	14	47	122
			1:MDIV	M11120	1/1		164	55.8	27	90	157
			1:MDIV	M11130	2/1 DEPL		265	46.8	28	63	140
			1:MDIV	M11170	3/1		220	40.4	27	49.5	133.5
			1:MDIV	M13210	2/1		99	26.7	18	42	77
			1:MDIV	M11140	1/4		123	46.6	26	71	138
			1:MDIV	M11180	2/4		265	36.4	23	42	126
			1:MDIV	M11210	3/4		146	43.9	20	52	167
			1:MDIV	M13230	3/4		196	26.2	21	28	72
			1:MDIV	M11110	3/5		162	43.7	28	56	128
			1:MDIV	M11154	5 MAR		144	29.7	14	44.5	86
			1:MDIV	M11160	2/5		268	18.6	10	26	55
			1:MDIV	M11204	7 MAR		250	32.3	15	44	105
			1:MDIV	M11220	2/7 H&S		53	13	8	11	57
			1:MDIV	M11230	1/7		98	23.6	16	32	75
			1:MDIV	M13160	2/7		639	28.7	17	38	105
			1:MDIV	M11303	HQ BT 11 MAR		387	33.7	19	42	107
			1:MDIV	M11310	1/11		158	37	21	45	135
			1:MDIV	M11320	2/11		191	37.3	22	48	126
			1:MDIV	M11330	3/11		178	33	21.5	48	106
			1:MDIV	M11340	5/11		161	49.7	37	69	126
			1:MDIV	M11400	1 CEB		305	36.5	27	52	103
			1:MDIV	M11700	1 LAR		130	26.5	14	34	102
			1:MDIV	M13700	3 LAR		86	39.4	27.5	51	125
			1:MDIV	M20450	1 LAR		117	41.4	15	47	160
			1:MDIV	M20470	3 LAR		101	35.3	22	43	95
			1:MDIV	M21410	1 TANKS		319	30.5	16	34	97

Label	TAMC	ECH/MNT	MNT/CAT	MSC	UAC	UNIT	NUMBER	Avg	50%	75%	95%
RCT by UAC				1:MDIV	M21610	1 ANGLICO	1 02	55.6	3 9	6 5	159
				1:MDIV	M21670	9 COMM	3 20	37.4	16.5	56.5	119.5
				1:MDIV	M21820	3 AABN SUP	2 89	35.4	2 2	4 9	99
				1:MDIV	M21825	3 AABN D CO	6 3	31.1	2 1	3 7	72
				1:MDIV	M28350	1 FORCE RECON	5 9	41.4	3 0	4 3	160
				1:MDIV	M35014	EAP	3 35	34.1	2 4	4 6	103
				1:MDIV	M92280	LAV TEST BR	4	6	5.5	8.5	11
				1:MEU	M20173	13 MEU	2 9	7 1	4 7	102	208
				1:MEU	M20195	MSSG 11 ORG	5 8	35.9	1 6	7 8	120
				1:MEU	M20196	MSSG 15 ORG	9 3	4 4	1 7	4 8	191
				1:MEU	M20310	15 MEU	1 0	67.5	2 1	135	265
				1:MEU	M28391	MSSG 13 ORG	1 28	34.4	25.5	4 2	124
				1:SRIG	M20371	1 SRIG	1 39	43.7	1 7	4 9	133
				3:MAW	M00011	MAG 11	4	394	394	456	456
				3:MAW	M00016	MAG 16	1	356	356	356	356
				3:MAW	M00039	MAG 39	1	6 1	6 1	6 1	6 1
				3:MAW	M00307	MWCS 38	1 23	33.6	2 0	3 9	112
				3:MAW	M00371	MWSS 371	1 61	27.7	1 5	4 2	86
				3:MAW	M00372	MWSS 372	1 65	35.7	2 2	4 5	105
				3:MAW	M00373	MWSS 373	1 29	4 8	3 1	6 4	160
				3:MAW	M00374	MWSS 374	7 5	51.4	2 9	7 6	208
				3:MAW	M00376	MWSS 37 AGSE	1 30	36.1	2 0	5 5	115
				3:MAW	M00830	MASS 3	8 4	2 9	17.5	4 5	71
				3:MAW	M00840	MACS 1	1 32	45.8	34.5	7 4	112
				3:MAW	M00880	MACS 7	1 03	36.3	2 5	4 9	102
				3:MAW	M00930	3 LAAD BN	7 5	53.5	2 6	8 0	190
				3:MAW	M01079	MWHS 3	4	49.8	1 4	8 6	158
				3:MAW	M01144	MTACS 38	3 2	58.3	3 6	7 6	199
				3:MAW	M01480	VMU 1	5 6	70.6	2 1	102	289
				3:MAW	M22960	1 LAAM BN	2 94	31.6	2 0	3 7	102
				3:MAW	M35100	MCAGCC	9 0	77.5	2 2	6 3	298
				3:MAW	M97104	1 LAAM BN	8	83.9	8 4	134	161

SECREP REPAIR CYCLE TIME FOR 1 MEF - CALENDAR YEAR 1996							
Label	Unit	Shop number	Subshop	Maint Cat	Number	Average	50%
1FSSG					5903	4.9	32
RCT by MAINT CATEGORY				D	1718	75.4	56
				F	1164	39.7	30
				H	3021	37.6	27
RCT by UNIT	CSSD-14 ORG				131	110.5	79
	CSSG 1 IX				581	66.9	48
	GSM				5191	45.5	31
RCT by UNIT AND MAINT CATEGORY	CSSD-14 ORG			D	51	151.4	128
	CSSD-14 ORG			F	79	84.5	59
	CSSG 1 IX			D	538	69.1	49
	GSM			D	1129	74.9	56
	GSM			F	1070	36.5	29
	GSM			H	2992	37.5	27
RCT by UNIT SHOP	CSSD-14 ORG				63	102	72
	CSSG 1 IX				237	50.3	36
	CSSG 1 IX				340	78.8	59.5
	GSM				2311	35.8	27
	GSM				410	74.4	53
	GSM				299	63.4	37
	GSM				158	52.3	44
	GSM				2011	47.5	34
RCT by UNIT SHOP AND SUBSHOP	CSSD-14 ORG	2	X		63	102	72
	CSSG 1 IX	3	3		52	38.1	31

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Label	Unit	Shop number	Subshop	Maint Cat	Number	Average	50%	75%	95%
RCT by UNIT SHOP AND SUBSHOP									
CSSG 1 IX	3	H			96	48.7	36	70.5	138
CSSG 1 IX	6	S			247	68.4	55	104	188
CSSG 1 IX	6	T			85	103.5	86	160	245
GSM	2	D			1615	38.5	28	52	110
GSM	2	X			688	29.5	24	40	75
GSM	3	3			280	54	36.5	71.5	158
GSM	3	H			90	130.5	131	168	282
GSM	4	4			68	89.1	114	139	179
GSM	4	L			134	69.9	38.5	92	233
GSM	4	M			97	36.3	28	46	114
GSM	5	5			76	61.5	56	77	136
GSM	5	Q			81	41.5	37	56	81
GSM	6	6			1122	40.1	25	48	141
GSM	6	R			712	54.1	45	61.5	135
GSM	6	S			95	46.9	33	56	146
GSM	6	T			82	91.5	44	93	316

PEI REPAIR CYCLE TIME FOR II MEF – CALENDAR YEAR 1996											
Label	TAMC	ECHMNT	MNTCAT	MSC	UAC	UNIT	NUMBER	Avg	50%	75%	95%
II MEF overall RCT							7368	56.5	32	74	193
RCT by TAMC	A						1983	51.1	27	63	182
	B						1150	60.3	37	78	195
	D						1747	78.5	51	116	240
	E						2488	43.5	28	56	133
RCT by MNTCAT			MARES				4260	58.7	31	77.5	209.5
			Non-MARES				3108	53.4	34	68	167
RCT by ECHMNT	2						7139	38.8	20	49	140
	3						3177	39.1	20	51	133
RCT by MSC			2:FSSG				3729	39.8	20	52	141
			2:MAW				1030	46.9	27	58	165
			2:MDIV				5018	36	19	45	130
			2:MEU				387	40.4	27	51	140
			2:OTHER				23	27.8	10	49	82
			2:SRIG				129	59.1	41	87	181
			2:FSSG				3729	39.8	20	52	141
			2:MAW				1030	46.9	27	58	165
			2:MDIV				5018	36	19	45	130
			2:MEU				387	40.4	27	51	140
			2:OTHER				23	27.8	10	49	82
			2:SRIG				129	59.1	41	87	181
RCT by MSC TAMC	A						627	49.3	21	62	195
	B						826	38.9	20	49	139
	D						1049	48.4	29	76	148
	E						1227	28.2	15	37	93

Label	TAMC	ECHMNNT	MNTCAT	MSC	UAC	UNIT	NUMBER	AVG	50%	75%	95%
RCT by MSC TAMC											
	A		2:MAW				322	43.8	21	54	160
	B		2:MAW				361	45.2	28	57	148
	D		2:MAW				246	61.8	37	84	224
	E		2:MAW				101	26.8	14	31	78
	A		2:MDIV				1457	32.9	19	38	115
	B		2:MDIV				470	35.2	20	42	130
	D		2:MDIV				1062	54.1	34	76	168
	E		2:MDIV				2029	29.1	14	38	101
	A		2:MEU				110	38.8	21.5	49	131
	B		2:MEU				39	36.4	24	43	145
	D		2:MEU				55	22.1	15	35	56
	E		2:MEU				183	47.8	34	71	140
	A		2:OTHER				4	19.5	9	36	59
	B		2:OTHER				1	79	79	79	79
	D		2:OTHER				3	5	4	10	10
	E		2:OTHER				15	31.1	14	49	173
	A		2:SRIG				28	79.8	53	113	193
	B		2:SRIG				31	30.5	23	35	108
	D		2:SRIG				67	63.1	51	99	185
	E		2:SRIG				3	75.7	43	168	168
RCT by MSC MNTCAT											
	MARES		2:FSSG				2042	41.3	22	61	140
	Non-MARES		2:FSSG				1687	38.1	19	47	146
	MARES		2:MAW				657	47.1	28	58	173
	Non-MARES		2:MAW				373	46.5	25	58	162
	MARES		2:MDIV				2877	38.7	20	48	139
	Non-MARES		2:MDIV				2141	32.5	16	42	105
	MARES		2:MEU				169	32.3	19	42	100
	Non-MARES		2:MEU				218	46.7	34	67	140
	MARES		2:OTHER				7	6.3	5	10	13
	Non-MARES		2:OTHER				16	37.2	15	56.5	173
	MARES		2:SRIG				115	55.9	34	86	152

Label	TAMC	ECH/MNT	MNT/CAT	MSC	UAC	UNIT	NUMBER	AVG	50%	75%	95%
RCT by MSC MNT/CAT			Non-MARES	2:SRIG			14	85.9	47.5	168	194
RCT by MSC ECH/MNT	2		2:FSSG				935	42.1	20	51	164
	3		2:FSSG				2794	39	20	52	133
	2		2:MAW				1001	47.1	27	58	165
	3		2:MAW				29	39.6	20	50	115
	2		2:MDIV				4888	35.9	19	45	128
	3		2:MDIV				130	41.4	15.5	42	186
	2		2:MEU				164	42.7	32	49.5	143
	3		2:MEU				223	38.8	25	55	121
	2		2:OTHER				22	26.8	10	15	82
	3		2:OTHER				1	49	49	49	49
	2		2:SRIG				129	59.1	41	87	181
RCT by UAC											
			2:FSSG	M12020	2 MED		82	27.7	17	30	96
			2:FSSG	M21310	8 ESB		282	49.9	26	65	181
			2:FSSG	M27010	8 MOTORS		137	36.6	21	42	131
			2:FSSG	M27101	H&S BN		150	61.9	36	102	179
			2:FSSG	M27110	2 SUP		29	60.6	44	91	141
			2:FSSG	M27112	2 FSSG		56	18.4	12	27	58
			2:FSSG	M27121	2 MNT		136	24.7	9	23.5	84
			2:FSSG	M27124	ELMACO		516	55.4	23.5	73	210
			2:FSSG	M27125	EMC		393	38.8	21	49	139
			2:FSSG	M27126	MTM		308	23.7	14	33	73
			2:FSSG	M27127	ORD CO		1128	28.8	15	37	98
			2:FSSG	M27128	GSM		80	18	8	29	55
			2:FSSG	M27139	CSSD 21		150	48.7	31	76	133
			2:FSSG	M27140	CSSD 23		71	40.6	28	56	121
			2:FSSG	M27150	2 LSB		51	40.5	16	47	195
			2:FSSG	M97200	2 MNT ORF		160	89.5	86	101.5	146.5
			2:MAW	M00014	MAG 14		34	61.4	54.5	84	160
			2:MAW	M00026	MAG 26		36	14.9	9	35	

Label	TAMC	ECH\MMNT	MNTCAT	MSC	UAC	UNIT	NUMBER	AVG	50%	75%	95%
RCT by UAC				2:MAW	M00029	MAG 29	1	7	7	7	7
				2:MAW	M00031	MAG 31	20	52.6	23	87	156
				2:MAW	M00207	MWCS 28	98	40.4	21	57	132
				2:MAW	M00271	MWSS 271	112	63.8	41	76	225
				2:MAW	M00272	MWSS 272	125	38.5	14	41	165
				2:MAW	M00273	MWSS 273	86	38.2	30.5	43	119
				2:MAW	M00274	MWSS 274	139	55.6	27	60	224
				2:MAW	M00820	MASS 1	48	45.9	36	74	119
				2:MAW	M00850	MACS 2	75	56.4	35	64	249
				2:MAW	M00870	MACS 6	113	47.1	31	70	118
				2:MAW	M00920	2 LAAD	97	37.6	28	47	127
				2:MAW	M01053	MWHS 2	6	105.7	84	154	260
				2:MAW	M01145	MTACS 28	24	46.8	24	51.5	187
				2:MAW	M20161	H&S 2 MACE	16	33.5	13	47.5	138
				2:MDIV	M12001	HQ BN 2 MARDIV	169	63.1	28	104	203
				2:MDIV	M12010	HQ BN 2 MARDIV	130	30.5	15	34	126
				2:MDIV	M12101	HQ 2 MAR	126	45.8	20.5	73	160
				2:MDIV	M12130	2/2	63	32.8	19	39	71
				2:MDIV	M12160	1/2	51	58.9	22	109	200
				2:MDIV	M12220	1/2	198	38.8	28	46	112
				2:MDIV	M12230	2/2	200	27.3	10	31	129.5
				2:MDIV	M13180	3/2	203	26.1	14	35	86
				2:MDIV	M12110	2/6	267	31.3	15	34	118
				2:MDIV	M12151	HQ 6 MAR	79	56.4	28	74	235
				2:MDIV	M12170	3/6	124	37.7	21	47	132
				2:MDIV	M12120	2/8	231	36.8	20	46	118
				2:MDIV	M12180	1/8	460	27.1	14.5	34.5	111.5
				2:MDIV	M12201	HQ 8 MAR	126	37.7	25	49	114
				2:MDIV	M12210	3/8	188	24.3	13	28.5	93
				2:MDIV	M12301	HQ BT 10 MAR	304	46.7	21	52.5	196
				2:MDIV	M12310	1/10	167	43.1	25	57	137
				2:MDIV	M12320	2/10	133	26.2	13	35	94

Label	TAMC	ECH/MNT	MNT/CAT	MSC	UAC	UNIT	NUMBER	AVG	50%	75%	95%
RCT by UAC											
	2:MDIV	M12330	3/10			115	55.1	34	69	182	
	2:MDIV	M12350	5/10			187	36.9	21	43	141	
	2:MDIV	M12190	2RECON			31	14.8	14	16	48	
	2:MDIV	M12400	2 CEB			292	28.1	16	39.5	82	
	2:MDIV	M18100	GTF GTMO			30	32.4	28	44	87	
	2:MDIV	M20364	CHEM BIO RESP			7	26.4	15	47	76	
	2:MDIV	M20460	2 LAI			163	29.6	16	32	104	
	2:MDIV	M21420	2 TANK			284	27.9	16	36.5	98	
	2:MDIV	M21590	2 RADIO			119	40.2	19	43	153	
	2:MDIV	M21625	2 ANGLICO			46	26.2	8.5	31	78	
	2:MDIV	M21640	8 COMM			275	47.9	34	71	112	
	2:MDIV	M21810	2 AABN			70	25	11.5	35	127	
	2:MDIV	M21812	2 AABN A CO			4	17	14.5	27	39	
	2:MDIV	M21813	2 AABN B CO			2	10.5	10.5	19	19	
	2:MDIV	M21814	2 AABN C CO			1	5	5	5	5	
	2:MDIV	M28351	2 FORCE RECON			64	26.7	19	41	79	
	2:MDIV	M52570	GDSF GTMO			109	53.4	37	71	200	
	2:MEU	M01266	HMM 266			1	8	8	8	8	
	2:MEU	M20179	22 MEU			50	55.3	37	93	143	
	2:MEU	M20180	24 MEU			7	30.9	14	16	144	
	2:MEU	M20181	26 MEU			14	33.8	17	33	181	
	2:MEU	M20197	MSSG 22			89	43.3	34	55	131	
	2:MEU	M20198	MSSG 26			127	27.1	14	40	99	
	2:MEU	M20199	MSSG 24			99	49.4	38	67	126	
	2:OTHER	M12015	IIMEF			16	27.6	11.5	15	173	
	2:OTHER	M20137	II MEF FWD			4	35.8	31.5	69	79	
	2:OTHER	M94101	SMAGTF 8			3	18	5	49	49	
	2:SRIG	M20361	H&S 2 SRIG			129	59.1	41	87	181	

SECREP REPAIR CYCLE TIME FOR II MEF -- CALENDAR YEAR 1996									
Label	Unit	Shop number	Subshop	Maint Cat	Number	Average	50%	75%	95%
2FSSG					5352	48.4	27	56	171
RCT by MAINT CATEGORY				D	789	106.1	74	162	286
				F	1773	35.8	22	42	105
				H	2790	40	26	50	127
RCT by UNIT					128	40.9	28	62	129
	EMC				5120	48.5	27	56	172.5
	GSM								
	ORD				63	50.5	35	59	139
RCT by UNIT AND MAINT CATEGORY				H	128	40.9	28	62	129
	EMC			D	750	109.5	84	168	293
	GSM			F	1765	35.8	22	42	104
	GSM			H	2605	39.6	26	49	125
RCT by UNIT SHOP					128	40.9	28	62	129
	EMC	2			200	18.9	13	27	52
	GSM	1			981	80	48	104	267
	GSM	2			265	44.9	27	48	121
	GSM	3			3472	39.1	24	45	139
	GSM	4			137	118.5	117	140	182
	GSM	5			65	32.2	25	28	76
	GSM	6			63	50.5	35	59	139
	ORD	6							
RCT by UNIT SHOP AND SUBSHOP					76	53.4	49.5	76	152
	EMC	2	F		137	19.3	13	26	61
	GSM	1	1		59	18.7	15	27	51
	GSM	1	B		155	51	40	62	150
	GSM	2	D						

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RCT by UNIT SHOP AND SUBSHOP		GSM	2	F			522	73.6	50.5	104	228
GSM	2	X					126	104.6	39.5	131	353
GSM	2	Z					138	113.7	62.5	175	376
GSM	3	3					212	33.3	27	46	79
GSM	4	7					2565	33.7	25	42	95
GSM	4	K					72	109.3	53.5	187.5	322
GSM	4	M					94	111.3	124	184	275
GSM	4	U					96	105.9	82.5	181	253
GSM	4	W					569	25.5	16	34	78
GSM	5	Q					134	117.3	117	140	178
GSM	6	T					58	24.3	24	26	53
ORD	6	R					51	53.7	35	62	139

PEI REPAIR CYCLE TIME FOR MEEF -- CALENDAR YEAR 1996

PEI REPAIR CYCLE TIME FOR III MEF -- CALENDAR YEAR 1996						
Label	TAMC	ECHMNT	MNTCAT	MSC	UAC	UNIT
III MEF Overall RCT						
RCT by TAMC						
A						
B						
D						
E						
RCT by MNTCAT						
MARES						
Non-MARES						
RCT by ECHMNT						
2						
3						
RCT by MSC						
1:MAW						
3:FSSG						
3:MDIV						
3:MEU						
3:OTHER						
1:MAW						
3:FSSG						
3:MDIV						
3:MEU						
3:OTHER						
RCT by MSC TAMC						
A						
B						
D						
E						
A						
B						

Label	TAMC	ECHMINT	MNTCAT	MSC	UAC	UNIT	NUMBER	AVG	50%	75%	95%
RCT by MSC TAMC	D			3:FSSG			482	29.9	17	36	92
	E			3:FSSG			974	27.7	13.5	34	94
	A			3:MDIV			788	36.8	19	40	134
	B			3:MDIV			254	39.6	17	54	147
	D			3:MDIV			313	61.5	36	77	181
	E			3:MDIV			1239	28.4	15	32	112
	A			3:MEU			128	35	20	29	135
	B			3:MEU			8	32.9	5.5	51.5	141
	D			3:MEU			48	33.8	11.5	61	115
	E			3:MEU			106	35.1	16	56	140
	A			3:OTHER			44	47.2	14	64	144
	B			3:OTHER			47	34.9	20	52	148
	D			3:OTHER			35	78.8	55	113	238
	E			3:OTHER			66	15	8	23	50
RCT by MSC MNTCAT											
	MARES	1:MAW					308	50.4	21	68	182
	Non-MARES	1:MAW					205	40.2	22	48	157
	MARES	3:FSSG					1161	26.8	15	35	81
	Non-MARES	3:FSSG					1372	41.2	21	46	156
	MARES	3:MDIV					1222	39.7	18	48	145
	Non-MARES	3:MDIV					1372	32.9	16	35	124
	MARES	3:MEU					162	30.5	13	43	112
	Non-MARES	3:MEU					128	40.1	21	43	155
	MARES	3:OTHER					118	46.2	21	74	148
	Non-MARES	3:OTHER					74	27.3	9.5	30	107
RCT by MSC ECHMINT											
	2	1:MAW					493	46.9	21	57	164
	3	1:MAW					20	30.5	30.5	42.5	75.5
	2	3:FSSG					642	36	17.5	39	113
	3	3:FSSG					1891	34.1	17	39	120
	2	3:MDIV					2576	35.9	17	41	135
	3	3:MDIV					18	52.6	14.5	39	519

Label	TAMC	ECHMNT	MNTCAT	MSC	UAC	UNIT	NUMBER	Avg	50%	75%	95%
RCT by MSC ECHMNT		2		3:MEU			226	32.9	16	33	135
		3		3:MEU			64	41.2	20.5	77	113
		2		3:OTHER			191	36.8	14	44	144
		3		3:OTHER			1	444	444	444	444
RCT by UAC											
			1:MAW	M00012	MAG 12		12	122	106	171.5	300
			1:MAW	M00024	1 MAW		15	5.2	6	18	47
			1:MAW	M00036	MAG 36		6	23.2	11	30	68
			1:MAW	M00107	MWCS 18 ORG MNT		97	41	17	55	130
			1:MAW	M00171	MWSS 171		53	42.8	25	57	157
			1:MAW	M00172	MWSS 172		79	34.1	21	47	125
			1:MAW	M00175	MWSG 17 PSD 17		10	6.8	4	8	20
			1:MAW	M00825	MASS 2 ORG MNT		47	43.1	23	64	132
			1:MAW	M00860	MACS 4		22	40.6	27	54	152
			1:MAW	M00910	1 STINGER		43	59.6	24	92	182
			1:MAW	M00979	MACS 4		77	51.4	34	78	176
			1:MAW	M01027	MWHS 1		2	22	22	22	22
			1:MAW	M01143	MTACS 18 ORG MN		15	34.3	12	33	257
			1:MAW	M01262	HMM 262		2	362.5	362.5	418	418
			1:MAW	M19783	1 STINGER		12	113.3	30.5	121.5	491
			1:MAW	M97301	1 MAW ORF		1	370	370	370	370
			1:MAW	M10107	MWCS 18 INT MNT		19	31.2	31	43	79
			1:MAW	M10825	MASS 2 INT MNT		1	17	17	17	17
			3:FSSG	M13020	3 MED		5	43.2	44	48	111
			3:FSSG	M28260	3 MED		14	48	29	46	169
			3:FSSG	M29001	H&S BN ORG MNT		104	27	19	28	76
			3:FSSG	M29001	H&S BN INT MNT		1	355	355	355	355
			3:FSSG	M29010	3 SUP		12	27	13	22	154
			3:FSSG	M29021	3 MNT		117	24	8	18	108
			3:FSSG	M29024	ELMACO		232	55.3	27	56.5	203
			3:FSSG	M29025	EMC		307	29.7	15	38	104
			3:FSSG	M29026	MTM		208	21.9	15	26.5	79

Label	TAMC	ECH/MINT	MNT/CAT	MSC	UAC	UNIT	NUMBER	AVG	50%	75%	95%
RCT by UAC				3:FSSG	M29027	ORD CO	597	19.8	7	25	77
				3:FSSG	M29028	GSM	33	18.8	8	37	52
				3:FSSG	M29040	3 SUPPORT BN	108	49.8	19	41	223
				3:FSSG	M29049	CSSD 36 ORG MNT	4	11.3	11.5	14	15
				3:FSSG	M2904I	CSSD 36 ORD MNT	39	45.7	36	54	120
				3:FSSG	M29100	9 ESB	138	41.9	22.5	41	165
				3:FSSG	M60131	CSSD 38	1	1	1	1	1
				3:FSSG	M69006	CSSD 34 ENG MNT	5	5.6	6	9	9
				3:FSSG	M69008	CSSD 76 ORG MNT	1	38	38	38	38
				3:FSSG	M69009	CSSG 3 ORG MNT	77	37.4	19	54	120
				3:FSSG	M6900I	CSSD 76 INT MNT	16	30	15.5	39	133
				3:FSSG	M69019	CSSG 3 IMA	453	50.6	27	57	193
				3:FSSG	M97300	OFR HQSVC CO	3	42.7	30	83	83
				3:FSSG	MMR121	TAEGU DSU	3	26.3	34	42	42
				3:FSSG	MMR127	DSU BLK 6	20	46.7	51.5	53.5	60
				3:FSSG	MMR133	DSU BLK 8	1	5	5	5	5
				3:FSSG	MMR530	DEPOT MNT FLT	34	30.1	20	47	98
				3:MDIV	M13001	HQ BN 3 MARDIV	156	34.4	16	31	116
				3:MDIV	M13101	HQ 3 MAR	138	41.8	24.5	56	151
				3:MDIV	M13110	1/3	101	26.1	15	31	106
				3:MDIV	M13120	1/3	210	32.3	15	47	142
				3:MDIV	M13130	3/3	335	32.9	19	37	112
				3:MDIV	M13403	3 MAR CMBT SPT	41	35.2	19	42	133
				3:MDIV	MMJ131	2/3	108	31.9	26	42	90
				3:MDIV	M13170	3/4	333	20.1	14	20	65
				3:MDIV	M13201	HQ 4 MAR	33	30	21	35	104
				3:MDIV	M13220	3/8	288	24.6	13	29.5	76
				3:MDIV	M13301	HQ BT 12 MAR	159	41.3	19	56	123
				3:MDIV	M13310	1/12	63	65.2	24	73	265
				3:MDIV	M13330	3/12	139	32.5	16	31	138
				3:MDIV	M21580	1 RADIO	144	45.9	22.5	58.5	148
				3:MDIV	M21635	7 COMM	206	59.9	33	84	189

III MEF CY96 PEI Report

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Label	TAMC	ECH/MNT	MNT/CAT	MSC	UAC	UNIT	NUMBER	Avg	50%	75%	95%
RCT by UAC				3:MDIV	M21639	1 RADIO B CO	3	697.3	707	713	713
				3:MDIV	M21800	CAB ORG MNT	114	42.1	21.5	43	169
				3:MDIV	M2180B	CAB INT MNT	6	31.7	11.5	15	141
				3:MDIV	MMR135	SUB UNIT 1	17	64.1	21	59	341
				3:MEU	M20175	31 MEU COMM	19	75.9	47	111	308
				3:MEU	M29048	MSSG 31	113	41.8	19	84	129
				3:MEU	MMJ132	31 MEU BLT 3/5	158	24.8	16	24	91
				3:OTHER	M20380	III MEF H&S BN	188	39.2	14	48.5	147
				3:OTHER	M38530	III MEF PWRMS	4	25.3	24	36.5	42

III MEF CY96 Secrep Report

SECREP REPAIR CYCLE TIME FOR III MEF - CALENDAR YEAR 1996						
Label	Unit	Shop number	Subshop	Maint Cat Number	Average	50% 75% 95%
3 FSSG					92	56.4 28 84.5 165
RCT by MAINT CATEGORY				H	54	45.5 28 59 149
RCT by UNIT	CSSG 3				88	51.2 28 70 149
RCT by UNIT AND MAINT CATEGORY	CSSG 3			H	52	44.2 28 57 149
RCT by UNIT SHOP	CSSG 3	3			72	42 23.5 55.5 146
RCT by UNIT SHOP AND SUBSHOP	CSSG 3	3	3		72	42 23.5 55.5 146

PEI REPAIR CYCLE TIME FOR MARFORRES - CALENDAR YEAR 1996								
Label	TAMC	ECHMNT	MNTCAT	MSC	UAC	UNIT	NUMBER	Avg
MARFORRES overall RCT							2302	136.5
RCT by TAMC	A						893	134.1
	B						132	130.7
	D						461	158.7
	E						816	127.4
RCT by MNTCAT			MARES				1510	143.4
			Non-MARES				792	123.3
RCT by ECHMNT	2						2469	106.2
	3						382	106.3
RCT by MSC			4:FSSG				549	103
			4:MAW				386	103.5
			4:MDIV				1878	107
			4:OTHER				38	143.7
			4:FSSG				549	103
			4:MAW				386	103.5
			4:MDIV				1878	107
			4:OTHER				38	143.7
RCT by MSC TAMC	A		4:FSSG				138	123
	B		4:FSSG				43	102.4
	D		4:FSSG				145	94.5
	E		4:FSSG				223	96.4
	A		4:MAW				185	107.8
	B		4:MAW				74	109.1
	D		4:MAW				94	100.9

Label	TAMC	ECHMNT	MNTCAT	MSC	UAC	UNIT	NUMBER	Avg	50%	75%	95%
RCT by MSC TAMC	E		4:MAW				33	73.6	54	112	219
	A		4:MDIV				711	108.1	69	146	352
	B		4:MDIV				43	89.2	85	131	252
	D		4:MDIV				345	125.3	99	172	307
	E		4:MDIV				779	98.8	64	116	315
RCT by MSC TAMC	A		4:OTHER				27	134	127	182	318
	B		4:OTHER				3	110.3	100	153	153
	D		4:OTHER				6	245.3	226	330	506
	E		4:OTHER				2	19.5	19.5	21	21
RCT by MSC MNTCAT							329	105.4	77	148	306
							220	99.5	70	134.5	268
							282	102.6	69	148	289
							104	105.8	66.5	113.5	287
							1214	115.6	82.5	156	352
							664	91.2	61.5	106	275
							25	146.8	124	194	347
							13	137.7	127	160	318
RCT by MSC ECHMNT	2		4:FSSG				202	102	72	168	253
	3		4:FSSG				347	103.6	76	137	299
	2		4:MAW				378	101.7	68	131	288
	3		4:MAW				8	188.5	186.5	271.5	421
	2		4:MDIV				1851	106.8	71	140	316
	3		4:MDIV				27	116.4	65	162	455
	2		4:OTHER				38	143.7	127	182	347
RCT by UAC			4:FSSG	M14021	4 MED H&S		1	45	45	45	45
			4:FSSG	M14024	4 MED CO C		1	8	8	8	8
			4:FSSG	M14026	4 MED CO A		7	100.3	101	172	268
			4:FSSG	M14027	4 MED SURG SPT		1	112	112	112	112

Label	TAMC	ECHMINT	MNTCAT	MSC	UAC	UNIT	NUMBER	Avg	50%	75%	95%
RCT by UAC				4:FSSG	M14550	4 LOG SPT	32	110.3	110.5	168.5	253
				4:FSSG	M14661	MTM	13	116.5	130	150	210
				4:FSSG	M14664	2 DSPLT MTM	18	50.5	43	59	153
				4:FSSG	M22320	6 ESB	52	129.9	90.5	197.5	405
				4:FSSG	M28110	6 MT BN H&S	23	56.5	58	62	182
				4:FSSG	M29051	H&S BN	27	109.9	100	184	202
				4:FSSG	M29060	4 SUP	13	39.8	21	31	153
				4:FSSG	M29070	4 MNT	50	133.7	87.5	191	392
				4:FSSG	M29073	ELMACO	21	81.9	64	89	246
				4:FSSG	M29074	EMC	4	124.8	101	165.5	225
				4:FSSG	M29075	MTM	6	139.7	161.5	178	200
				4:FSSG	M29076	GSM	6	52	56	76	84
				4:FSSG	M29077	4 MNT	50	130	94.5	155	273
				4:FSSG	M29078	ELMACO DET 2	15	171.1	137	137	453
				4:FSSG	M70694	ORD CO	102	105.1	99	127	265
				4:FSSG	M74746	ORD CO	71	75.7	49	86	307
				4:FSSG	M74860	MTM 1 DSP	25	66.8	50	74	149
				4:FSSG	M75188	EMC DET 1	3	50.3	75	75	75
				4:FSSG	M75190	4 FSSG DET A	1	41	41	41	41
				4:FSSG	M75191	MWSG 47	1	108	108	108	108
				4:FSSG	M75192	4 FSSG DET F	4	194.5	212.5	250	263
				4:FSSG	M77010	4 FSSG DET G	2	118.5	118.5	154	154
				4:MAW	M00407	MACG 48	57	97.5	81	145	233
				4:MAW	M00409	MWCS 48 DET B	31	66.7	40	62	215
				4:MAW	M00510	MWSS 471 DET A	3	84	89	155	155
				4:MAW	M00512	MWSS 474	26	121.9	115	164	284
				4:MAW	M00524	MWSS 472	6	70.8	52	56	218
				4:MAW	M00526	MWSS 472 DET A	12	72.8	69	95.5	201
				4:MAW	M00527	MWSS 472 DET B	3	120.7	102	198	198
				4:MAW	M00540	MWSS 473 DET A	5	225	219	281	448
				4:MAW	M00541	MWSS 471 DET B	2	7.5	7.5	15	15
				4:MAW	M00542	MWSS 473 DET B	5	40.4	19	28	153

Label	TAMC	ECHMNT	MNTCAT	MSC	UAC	UNIT	NUMBER	AVG	50%	75%	95%
RCT by UAC				4:MAW	M00983	MASS 6 DET A	16	72	45.5	74.5	309
				4:MAW	M00985	MASS 6	13	171.6	113	156	421
				4:MAW	M01138	MALS 46 DET B	3	165	155	223	223
				4:MAW	M01139	MWSS 473 DET A	2	108	108	182	182
				4:MAW	M01149	MWSS 473	31	107.3	60	214	289
				4:MAW	M01199	MWSS 474 DET A	11	141	163	201	247
				4:MAW	M01209	4 LAAD A BTRY	10	128.3	56	97	533
				4:MAW	M01283	MACS 24 TAOC DE	35	165.7	75	217	559
				4:MAW	M01309	MACS 24	16	187.3	180.5	270.5	307
				4:MAW	M04157	MWSS 471	8	143.4	129.5	193.5	259
				4:MAW	M04171	4 LAAM H&S DET	6	41.7	22.5	80	118
				4:MAW	M04715	4 LAAD B BTRY	46	81	69.5	117	151
				4:MAW	M23971	4 LAAM H&S	23	48.1	44	57	196
				4:MAW	M23973	4 LAAM B BTRY	9	17.9	12	21	58
				4:MAW	M23974	4 LAAM C BTRY	7	63.3	56	112	189
				4:MDIV	M14008	4 SCAMP PLT	1	37	37	37	37
				4:MDIV	M14030	4 LAR	102	103.8	66.5	119	275
				4:MDIV	M14101	HQ 23 MAR	27	115.3	84	135	281
				4:MDIV	M14110	1/23	69	57.7	50	82	193
				4:MDIV	M14120	2/23	10	124.7	85	198	240
				4:MDIV	M14130	3/23	36	106.7	71.5	160.5	274
				4:MDIV	M14151	24 MAR	17	62.7	62	93	104
				4:MDIV	M14160	1/24	46	152	116	176	406
				4:MDIV	M14170	2/24	54	94.1	68	133	318
				4:MDIV	M14180	3/24	145	85.9	59	81	306
				4:MDIV	M14201	HQ 25 MAR	18	156.7	142	163	621
				4:MDIV	M14210	1/25	150	75.5	51	103	216
				4:MDIV	M14220	2/25	43	54	42	92	134
				4:MDIV	M14230	3/25	39	153.1	111	273	388
				4:MDIV	M14301	HQ BT 14 MAR	26	111.4	74.5	150	457
				4:MDIV	M14310	1/14	8	36.8	44.5	45	51
				4:MDIV	M14320	2/14	72	142.9	94	185	399

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Label	TAMC	ECHMNT	MNTCAT	MSC	UAC	UNIT	NUMBER	AVG	50%	75%	95%
RCT by UAC				4:MDIV	M14330	3/14	87	109.8	77	158	303
				4:MDIV	M14340	4/14	113	107.4	85	147	308
				4:MDIV	M14400	4 CEB	41	104.5	70	140	359
				4:MDIV	M14600	1/14	70	89.1	71	140	246
				4:MDIV	M14640	5/14	45	89.9	89	111	246
				4:MDIV	M14653	4 TANK	45	129.3	95	150	399
				4:MDIV	M14662	TRK 4 MARDIV	3	62	48	104	104
				4:MDIV	M14700	4 RECON	54	163.3	117	257	415
				4:MDIV	M14704	4 FORCE RECON	1	80	80	80	80
				4:MDIV	M21400	8 TANK	69	172.7	96	235	576
				4:MDIV	M21440	4 TANK	77	109.2	59	136	343
				4:MDIV	M21626	3 ANGLICO	58	64.2	47	88	222
				4:MDIV	M21628	4 ANGLICO	25	131.1	155	181	268
				4:MDIV	M21680	6 COMM	95	142	77	225	525
				4:MDIV	M21830	4 AABN	151	99.8	77	132	265
				4:MDIV	M28353	4 RECON	10	128.2	88	145	511
				4:MDIV	M71703	1 PLT TRK CO	4	34.3	23.5	57.5	79
				4:MDIV	M71706	HQ 2 PLT REINT	4	124.5	124.5	183.5	192
				4:MDIV	M73010	3 FORCE RECON	30	113.8	99	103	520
				4:MDIV	M74016	HQ 23 MAR	9	138.8	93	232	366
				4:MDIV	M74215	25 MAR	24	123.7	91.5	146	329
				4:OTHER	M14004	COMM MARFORRES	20	150.7	140	172	338.5
				4:OTHER	M26382	HQB/N MARFORRES	1	120	120	120	120
				4:OTHER	M75240	COMM MARFORRES	17	136.8	100	194	506

APPENDIX B. RETAIL ORDER AND SHIP TIME

DATA SELECTION

Data for the retail order and ship time report come from headquarters MIMMS archives held at MARCORLOGBASE-Albany.

Archived MIMMS records (i.e., for EROs that have closed) contain two types of records. The "header" record contains information about the repair itself, such as item fixed, DRIS, close date, etc. (the header records provided the information for the retail RCT report in App. A). The second, or "trailer," record includes information about the parts required (the EROSLs, or ERO shopping lists) associated with the ERO. Each EROSL record contains, among other things, the requisition document number, the source of supply, the final status, and the date received. This was the source for the baseline retail order and ship time report.¹

The retail OST report is based on the following data selection:

- EROSLs with a date received in CY96
- Items issued out of local stock (routing identifier code beginning with "M": for I MEF, MC1 and MC3; for II MEF, ML1 and ML3; for III MEF, MK1 or MK3, MR1 or MR3—none for MARFORRES, which does not have retail stocks)
- non-backordered requisitions, i.e., those with supply status BA.

REPORT LOGIC

The logic for the retail OST baseline report is exceedingly simple. Only one time is calculated—the end-to-end order and ship time, defined as the date received-document date. The document date is

¹The MIMMS database, however, will not be the source for the recurrent USMC retail OST report scheduled to be issued quarterly by MDAC. For reasons discussed earlier in the text, it is impossible to separate back-ordered and non-back-ordered requisitions in the EROSL archive of MIMMS, making any measurement of non-backordered OST impossible. Instead, an alternative has been developed to build an archive of SASSY requisition histories, based in the SASSY HDIS file. While that archive is currently being filled, it was not started until well after the baseline year was over.

extracted from the document number and represents the draft ATLASTS date.

REPORT STRUCTURE

The retail OST report structure is similar to the retail RCT report, i.e., it tends to follow a descending hierarchy. Results are presented below in tabular form for each MEF; there again is no overall USMC report. The sections of the report include OST reported by:

- Overall MEF
- MSC
- UAC/unit, arranged by MSC.

I MEF RETAIL OST - CALENDAR YEAR 1996							I MEF RETAIL OST - CALENDAR YEAR 1996				
Label	MSC	Unit	RUC	Location	Number	Average	50%	75%	95%	108-	
I MEF Overall OST					70990	7.1	4	7	22		
OST by MSC					391	4.2	3	5	12		
1:CAX					28247	3.4	1	5	11		
1:FSSG					24686	11.1	7	12	34		
1:MDIV					1302	12.5	7	8	66		
1:MEU					1210	6.9	6	7	15		
1:SRIG					14174	7	4	7	22		
3:MAW					975	6.9	4	6	23		
MCB_PEN					391	4.2	3	5	12		
OST by MSC UAC UNIT LOC					1810	5.5	5	6	12	-108-	
1:CAX					1495	5.2	5	6	13		
1:FSSG					364	5.9	4	5	26		
1:MDIV					226	6.7	5	7	20		
1:MEU					562	3.1	2	5	8		
1:SRIG					1077	5.1	4	6	9		
1:MAW					636	3.6	3	5	8		
1:IP2					1770	1.5	1	1	6		
1:IP3					498	9.2	7	11	29		
1:IP4					2757	7.4	7	8	13		
1:IP5					3720	1.6	0	2	7		
1:IP6					10196	1.2	0	1	4		
1:IP7					342	13.8	13	19	26		
1:IP8					548	6.9	5	7	16		
1:IP9					1444	4.3	3	5	9		
1:IP10					109	7.4	7	11	16		
1:IP11					236	8.7	8	10	20		

Label	MSC	Unit	RUC	Location	Number	Average	50%	75%	95%
OST by MSC UAC UNIT LOC									
1:1:FSSG	DSU	M28411	PENDLETON		422	2.7	1	3	10
1:1:MDIV	HQ BN 1 MARDIV	M11001	PENDLETON		249	7.9	5	9	21
1:1:MDIV	HQ CO 1 MAR	M11104	PENDLETON		369	9.8	7	10	22
1:1:MDIV	3/5	M11110	PENDLETON		91	6.9	4	13	13
1:1:MDIV	1/1	M11120	PENDLETON		166	14.2	13	13	39
1:1:MDIV	2/1 DEPL	M11130	PENDLETON		857	39.5	25	67	103
1:1:MDIV	1/4	M11140	PENDLETON		1023	12.4	5	8	62
1:1:MDIV	2/5	M11160	PENDLETON		198	13.7	8	14	48
1:1:MDIV	3/1	M11170	PENDLETON		881	11	10	14	24
1:1:MDIV	2/4	M11180	PENDLETON		704	4.9	5	7	10
1:1:MDIV	7 MAR	M11204	29 PALMS		395	9.8	8	13	19
1:1:MDIV	3/4	M11210	PENDLETON		529	13.4	10	21	28
1:1:MDIV	1/7	M11230	29 PALMS		204	20.5	18	20	38
1:1:MDIV	HQ BT 11 MAR	M11303	PENDLETON		461	8.3	7	10	16
1:1:MDIV	1/11	M11310	PENDLETON		1110	4.4	3	6	12
1:1:MDIV	2/11	M11320	PENDLETON		2125	6.9	5	7	16
1:1:MDIV	3/11	M11330	29 PALMS		350	1	5	9	48
1:1:MDIV	5/11	M11340	PENDLETON		985	5.5	5	7	13
1:1:MDIV	1 CEB	M11400	29 PALMS		1712	6.1	6	6	13
1:1:MDIV	2/7	M13160	29 PALMS		164	25	19.5	28.5	66
1:1:MDIV	1 LAR	M20450	PENDLETON		844	10	7	12	23
1:1:MDIV	3 LAR	M20470	29 PALMS		1179	24	16	27	65
1:1:MDIV	1 TANKS	M21410	29 PALMS		1636	10.5	8	11	26
1:1:MDIV	1 ANGLICO	M21610	PENDLETON		90	13.5	12	16	45
1:1:MDIV	9 COMM	M21670	PENDLETON		1080	10.8	7	12	26
1:1:MDIV	3 AABN SUP	M21820	PENDLETON		1866	10.2	6	12	33
1:1:MDIV	3 AABN D CO	M21825	29 PALMS		291	14.5	13	16	26
1:1:MDIV	1 FORCE RECON	M28350	PENDLETON		327	9.1	6	10	28
1:1:MDIV	EAP	M35014	29 PALMS		2461	10.6	7	10	29
1:1:MEU	MSSG 11 ORG	M20195	PENDLETON		545	14.3	5	8	77
1:1:MEU	MSSG 15 ORG	M20196	PENDLETON		130	17.1	3	6	148

Label	MSC	Unit	RUC	Location	Number	Average	50%	75%	95%
OST by MSC UAC UNIT LOC	1:MEU	15 MEU	M20310	PENDLETON	54	9.1	7	7	13
1:MEU	MSSG 13 ORG	M28391	USS DULUTH		527	10.1	7	11	32
1:SRIG	1 SRIG	M20371	PENDLETON		1177	6.7	6	7	14
3:MAW	MWCS 38	M00307	EL TORO		540	12.9	8	14	30.5
3:MAW	MWSS 371	M00371	YUMA		170	9.9	7	7	27
3:MAW	MWSS 372	M00372	PENDLETON		986	6.9	5	6	23
3:MAW	MWSS 373	M00373	EL TORO		817	12.6	8	15	33
3:MAW	MWSS 374	M00374	TUSTIN		928	1	6	8	19
3:MAW	MWSG 37 AGSE	M00376	29 PALMS		1000	10.7	6	8	20
3:MAW	MASS 3	M00830	PENDLETON		500	8.4	5	8	24
3:MAW	MACS 1	M00840	PENDLETON		594	5.2	4	6	14
3:MAW	MACS 7	M00880	YUMA		514	9.2	7	8	21
3:MAW	3 LAAD BN	M00930	PENDLETON		549	8	6	9	22
3:MAW	MTACS 38	M01144	EL TORO		134	10.4	7	16	28
3:MAW	VMU 1	M01480	29 PALMS		56	3.2	2.5	3	6
3:MAW	1 LAAM BN	M22960	YUMA		1063	8.1	5	8	20
3:MAW	MNT FLOAT	MMG810			6093	3	1	2	12
3:MAW	1 LAAM BN	MSAJ70	YUMA		69	25.2	16	34	63
3:MAW	MACS 1 SUP	MSAM20	PENDLETON		75	2.1	0	2	14
3:MAW	MNT FLOAT	MSAM80			70	6.6	2	8	20
MCB_PEN	SCHOOL BN SUP	M93001	PENDLETON		749	5.6	4	6	14
MCB_PEN	SOI SASSY	M93250	PENDLETON		180	11.4	5	8	28

II MEF RETAIL OST -- CALENDAR YEAR 1996						
Label	MSC	Unit	RUC	Location	Number	Average
II MEF overall OST					71214	8.4
OST by MSC					22559	7.7
2:FSSG					4484	11.1
2:MAW					37256	8.6
2:MDIV					2480	8.3
2:MEU					1146	8.6
2:SRIG					3288	7.7
MCB LEJ						
OST by MSC UAC UNIT LOC					1166	7.6
2:FSSG	2 MED			LEJEUNE	2192	9.6
2:FSSG	8 ESB			LEJEUNE		10
2:FSSG	8 MOTORS			LEJEUNE	3924	8.1
2:FSSG	H&S BN			LEJEUNE	958	7.3
2:FSSG	2 SUP			LEJEUNE	738	6.2
2:FSSG	2 FSSG			LEJEUNE	64	10.1
2:FSSG	2 MNT			LEJEUNE	1685	10
2:FSSG	CSSD 21			CHERRY PT	491	6.6
2:FSSG	2 LSB			LEJEUNE	1114	4.7
2:FSSG	ISSC			LEJEUNE	4067	12.3
2:FSSG	RIP			LEJEUNE	6098	3.8
2:MAW	MWCS 28			CHERRY PT	425	8.8
2:MAW	MWSS 271			CHERRY PT	1416	9.6
2:MAW	MWSS 272			NEW RIVER	399	9.4
2:MAW	MWSS 273			BEAUFORT	623	15.4
2:MAW	MWSS 274			CHERRY PT	521	11.2
2:MAW	MASS 1			CHERRY PT	141	11.1
2:MAW	MACS 2			BEAUFORT	158	21.8
2:MAW	2 LAAD			CHERRY PT	340	10.1

Label	MSC	Unit	RUC	Location	Number	Average	50%	75%	95%
OST by MSC UAC UNIT LOC									
2:MAW	MTACCS 28	M01145	CHERRY PT		274	13.2	9	14	47
2:MAW	MACS 2 MF	MSAM60	BEAUFORT		87	4.1	1	5	22
2:MDIV	HQ BN 2 MARDIV	M12001	LEJEUNE		4438	8.3	7	8	15
2:MDIV	HQ 2 MAR	M12101	LEJEUNE		58	12.6	11.5	17	37
2:MDIV	2/6	M12110	LEJEUNE		939	8	9	9	12
2:MDIV	2/8	M12120	LEJEUNE		1893	8.8	7	10	15
2:MDIV	HQ 6 MAR	M12151	LEJEUNE		309	8.4	6	9	28
2:MDIV	3/6	M12170	LEJEUNE		1284	8.3	7	8	22
2:MDIV	1/8	M12180	LEJEUNE		576	6.2	6	7	9
2:MDIV	HQ 8 MAR	M12201	LEJEUNE		458	6.4	6	6	13
2:MDIV	3/8	M12210	LEJEUNE		1091	9.7	6	8	42
2:MDIV	1/2	M12220	LEJEUNE		792	8.5	6	11	18
2:MDIV	2/2	M12230	LEJEUNE		192	19.4	14	29	45
2:MDIV	HQ BT 10 MAR	M12301	LEJEUNE		1200	5.9	5	6	12
2:MDIV	1/10	M12310	LEJEUNE		1873	9.2	7	12	18
2:MDIV	2/10	M12320	LEJEUNE		1982	6.5	5	7	11
2:MDIV	3/10	M12330	LEJEUNE		677	11.6	7	13	29
2:MDIV	5/10	M12350	LEJEUNE		1744	6.7	6	7	15
2:MDIV	2 CEB	M12400	LEJEUNE		3612	8	7	8	16
2:MDIV	3/2	M13180	LEJEUNE		1194	8.3	7	8	15
2:MDIV	CHEM BIO RESP	M20364	LEJEUNE		66	6	3	8	15
2:MDIV	2 LAI	M20460	LEJEUNE		1934	9.9	7	11	27
2:MDIV	2 TANK	M21420	LEJEUNE		2522	8.2	6	8	15
2:MDIV	2 RADIO	M21590	LEJEUNE		1638	10.6	9	14	20
2:MDIV	2 ANGLICO	M21625	LEJEUNE		595	8.3	6	12	19
2:MDIV	8 COMM	M21640	LEJEUNE		2411	6.1	6	7	13
2:MDIV	2 AABIN	M21810	LEJEUNE		3305	12.7	8	12	35
2:MDIV	2 FORCE RECON	M28351	LEJEUNE		217	6.3	6	7	20
2:MDIV	GDSF GTMO	M52570	GTMO		63	20.4	19	24	37
2:MDIV	2 RADIO MF	M5AF20	LEJEUNE		103	0.9	0	1	1
2:MDIV	8 COMM MF	MSAT80	LEJEUNE		74	9.7	5	9	25

II MEF CY96 Retail OST Report

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Label	MSC	Unit	RUC	Location	Number	Average	50%	75%	95%
OST by MSC UAC UNIT LOC									
2:MEU	24 MEU	M20180	APO		51	11.8	9	12	28
2:MEU	MSSG 22	M20197	LEJEUNE		419	8	6	7	27
2:MEU	MSSG 26	M20198	LEJEUNE		1307	6.4	4	6	15
2:MEU	MSSG 24	M20199	APO		680	11.3	6	10.5	29
2:SRIG	H&S 2 SRIG	M20361	LEJEUNE		995	8.4	6	7	17
2:SRIG	H&S 2 SRIG MF	MSAT10	LEJEUNE		151	9.9	2	2	62
MCB LEJ	MC ENG SCHOOL	M93050	LEJEUNE		331	8.7	7	10	16
MCB LEJ	MC SVC SPT SCHO	M93053	LEJEUNE		2139	8.1	6	9	18
MCB LEJ	SOI	M93055	LEJEUNE		785	6.6	6	7	15

III MEF RETAIL OST -- CALENDAR YEAR 1996										
Record type	MSC	Unit	RUC	Location		Number	Average	50%	75%	95%
III MEF overall OST						45541	9.1	6	9	28
OST by MSC	---									
	1:MAW					5156	10.8	7	12	34
	3:FSSG					18801	6.6	5	7	18
	3:MDIV					19189	10.3	7	11	33
	3:MEU					1168	20	9	21	69
	3:OTHER					949	9.3	4	6	38
	MCB_BUTLER					202	16.9	15	18	33
OST by MSC UAC UNIT LOC	---									
		MSA50	HAWAII			58	14.1	5	8	61
	1:MAW	M00107	OKINAWA			974	12.6	8	13	28
	1:MAW	M00171	OKINAWA			788	27	23	35	49
	1:MAW	M00172	OKINAWA			1944	6.4	6	7	13
	1:MAW	MASS 2	OKINAWA			313	8.4	6	8	25
	1:MAW	1 STINGER	OKINAWA			235	7.9	6	8	19
	1:MAW	MACS 4	OKINAWA			658	5.9	5	7	13
	1:MAW	MTACS 18	OKINAWA			150	5.9	4	5	28
	3:FSSG	3 MED	OKINAWA			197	12.1	10	12	34
	3:FSSG	H&S BN	OKINAWA			682	5.6	4	8	12
	3:FSSG	3 SUP	OKINAWA			349	7.9	6	9	17
	3:FSSG	3 MNT	OKINAWA			1620	10.4	7	11	27
	3:FSSG	ELMACO	OKINAWA			1032	3.6	1	6	12
	3:FSSG	EMC	OKINAWA			319	5.2	4	5	11
	3:FSSG	MTM	OKINAWA			512	6	4	6	14
	3:FSSG	ORD CO	OKINAWA			747	5.3	4	6	17
	3:FSSG	GSM	OKINAWA			1028	5.5	5	7	10
	3:FSSG	3 SUPPORT BN	OKINAWA			4850	5.7	4	6	13

Record type	MSC	Unit	RUC	Location	Number	Average	50%	75%	95%
OST by MSC UAC UNIT LOC									
3:FSSG	9 ESB	M29100	OKINAWA		2078	7.8	5	6	15
3:FSSG	CSSD 76	M69008	OKINAWA		121	25.6	22	30	68
3:FSSG	CSSG 3	M69009	KANEOHE		1063	15.1	12	15	50
3:FSSG	CSSG 3 (ISS MNT	MMK109	KANEOHE		661	7.9	7	10	19
3:FSSG	MSU	MMR115	OKINAWA		135	16.7	7	11	73
3:FSSG	CSSG 3 (RIP)	MSAG20	KANEOHE		761	4.7	3	5	11
3:FSSG	MNT FLT	MSAG40	OKINAWA		2641	2.2	1	3	7
3:MDIV	HQ BN 3 MARDIV	M13001	OKINAWA		2442	5.3	5	6	9
3:MDIV	HQ 3 MAR	M13101	KANEOHE		1332	11.2	9	11	35
3:MDIV	1/3	M13120	KANEOHE		704	14.6	8	13	62
3:MDIV	3/3	M13130	KANEOHE		1286	12.5	7	14	41
3:MDIV	3/4	M13170	OKINAWA		1015	7.7	6	10	19
3:MDIV	HQ 4 MAR	M13201	OKINAWA		631	7.9	4	8	24
3:MDIV	3/8	M13220	OKINAWA		1983	8.5	7	9	28
3:MDIV	HQ BT 12 MAR	M13301	OKINAWA		318	6.5	6	6	18
3:MDIV	1/12	M13310	KANEOHE		990	13.4	7	12	50
3:MDIV	3/12	M13330	OKINAWA		1516	6.3	6	7	13
3:MDIV	1 RADIO	M21580	KANEOHE		909	15.7	15	20	33
3:MDIV	7 COMM	M21635	OKINAWA		2202	16.9	11	19	43
3:MDIV	CAB	M21800	OKINAWA		2282	8.5	6	8	15
3:MDIV	2/3	MMJ131	OKINAWA		1366	7.6	6	8	15
3:MDIV	SUB UNIT 1	MMR135	OKINAWA		213	37.3	27	46	109
3:MEU	31 MEU COMM	M20175	OKINAWA		110	33.3	5	6	215
3:MEU	MSSG 31	M29048	OKINAWA		280	20.3	13	24	74
3:MEU	31 MEU BLT 3/5	MMJ132	OKINAWA		778	18	10	21	69
3:OTHER	H&S BN III MEF	M20380	OKINAWA		949	9.3	4	6	38
MCB BUTLER	MCB BUTLER	M29049	OKINAWA		202	16.9	15	18	33

APPENDIX C. ORDER AND SHIP TIME FROM WHOLESALE SUPPLY

DATA SELECTION

Data for the USMC wholesale OST report come from the Logistics Response Time database, under the control of the Defense Logistics Agency (DLA) and maintained by the Defense Automated Addressing System Center (DAASC) at Dayton, OH. The LRT includes requisition histories for all the Services for most items they requisition. The database is evolving (and the coverage changed over the course of data collection) as it seeks to include more and more of the order and ship process. The baseline year measurements include all Marine Corps requisition history data sent to RAND from DAASC for requisitions closing with a D6S in CY 1996. However, there are several things to keep in mind. Very few LRT data were available before April 1996, and "normal" numbers of cases only started entering the database in June 1996. Furthermore, until February 1997, only items managed by DLA and the Navy were included in the database (in 1997, coverage extended to all items except those managed by the Air Force). Thus, the "1996" database isn't precisely a year's worth of data; however, it is the best source of data available. We will continue to refer to the baseline "year" of 1996 as a kind of shorthand. The other thing to note is that not all Marine requisitions are included (beyond the issue of DLA and Navy managed items). Only ground force and other non-aviation Marine requisitions are included (i.e., those documents beginning with "M" as opposed to "R" and "V" for Marine air). Logistics for Marine aviation is a separate process, supported and managed by the Navy; it lies outside the scope of this project.

In creating the baseline report, the following conditions were applied:

- Requisitions closed out with D6S date in CY 1996
- Non-back-ordered issues from DLA supply depots (corp_fill_type = A) for overall OSTs and for the ICP processing segment; otherwise, all issues are included

- FMF ground customers only

REPORT LOGIC

This report also has a simple logic. Order and ship times are calculated as end-to-end measures defined as the document date to the D6S date (extracted from the document number and representing the ATLASS draft date). Internal segments of the O&S process are calculated similarly, i.e.:

- Document date to DAAS establish date: time to move the requisition off the base
- DAAS establish date to MRO date: ICP processing time for non-back-ordered requisitions
- MRO date to depot ship date: depot processing time
- Depot ship date to D6S date: transit and receipt take-up time

REPORT STRUCTURE

The following baseline year OST report has two major parts. The first part reports overall OSTs; the second part provides finer detail, reporting segment times for those segments the Marine Corps has most direct influence over—moving the requisition off the base and transit/receipt take-up time. As in the previous reports, we follow a descending hierarchy:

Overall OSTs:

- overall FMF
- by MEF
- by MEF and MSC
- by MEF, MSC, and RUC/unit

Segment times:

Docdate to DAAS establish by

- overall FMF
- MEF
- MEF and MSC
- MEF, MSC, and RUC/unit

Depot ship date to D6S date by:

- overall FMF
- MEF
- MEF and MSC
- MEF, MSC, and RUC/unit.

USMC WHOLESALE ORDER AND SHIP TIME--CALENDAR YEAR 1996									
Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
USMC Overall OST					130102	31.8	21	41	84
OST by MEF									
1~MEF					57615	21.5	16	23	57
2~MEF					28550	22.3	18	24	51
3~MEF					25053	56.8	55	69	104
4~MEF					18884	44.5	34	54	113
OST by MEF MSC									
1~MEF 1:FSSG					42927	19.1	15	21	45
1~MEF 1:MDIV					8705	28.9	21	31	73
1~MEF 1:MEU					892	43.4	31	65	113
1~MEF 1:SRIG					126	33.4	28	42	68
1~MEF 3:MAW					4965	25.6	21	28	60
2~MEF 2:FSSG					23434	20.9	17	22	42
2~MEF 2:MAW					1692	26.3	18	28	67
2~MEF 2:MDIV					3041	28.7	21	31	76
2~MEF 2:MEU					354	35.3	23	39	107
3~MEF 1:MAW					2117	67.8	68	86	115
3~MEF 3:FSSG					19613	54	54	68	91
3~MEF 3:MDIV					2805	67.1	63	83	141
3~MEF 3:MEU					240	56.3	49	69.5	141.5
3~MEF 3:OTHER					278	70.3	66	85	162
4~MEF 4:FSSG					5083	50.8	37	62	133
4~MEF 4:MAW					2625	42.7	28	46	87
4~MEF 4:MDIV					11176	42.1	34	53	107
OST by MEF DODAAC UNIT									
1~MEF 1:FSSG M21300					543	17.5	16	21	31
1~MEF 1:FSSG M28280					642	22.2	18	23	56
1~MEF 1:FSSG M28301					345	22.9	18	24	48
1~MEF 1:FSSG M28321					220	20.2	18.5	21	36

Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
OST by MEF MSC DODAAC UNIT									
1~MEF	1:FSSG	M28331	MSU		968	18	14	19	4.9
1~MEF	1:FSSG	M28332	CSSD-14 IX		259	19.6	17	20	41
1~MEF	1:FSSG	M28339	CSSG 1 IX		1780	16	14	18	33.5
1~MEF	1:FSSG	M28340	MSU		1805	17.6	14	20	42
1~MEF	1:FSSG	M28341	SHOP STORES IP2		7097	12.8	10	14	29
1~MEF	1:FSSG	M28349	CSSD 12		346	27.7	26	35	50
1~MEF	1:FSSG	M28357	CSSD 16 (MIP)		318	24.6	20	27	64
1~MEF	1:FSSG	M28370	1 LSB		536	24.7	18	29	68
1~MEF	1:FSSG	M97111	MEDLOG		118	83.2	47.5	91	333
1~MEF	1:FSSG	MMC100	GEN ACCT		27113	19.9	16	22	47
1~MEF	1:FSSG	MMFAG8	MNT FLOAT		153	21.7	13	20	90
1~MEF	1:FSSG	MMT100	GEN ACCT MCAGCC		450	35.3	20	49	92
1~MEF	1:MDIV	M11001	HQ BN 1 MARDIV		269	28.8	21	34	64
1~MEF	1:MDIV	M11104	HQ CO 1 MAR		60	4.3	21	37	123.5
1~MEF	1:MDIV	M11110	3/5		186	21.7	18	24	42
1~MEF	1:MDIV	M11120	1/1		56	62.6	42.5	80	223
1~MEF	1:MDIV	M11130	2/1 DEPL		150	27.2	26	28	53
1~MEF	1:MDIV	M11140	1/4		132	60	37	80	210
1~MEF	1:MDIV	M11180	2/4		104	29.5	22	28	70
1~MEF	1:MDIV	M11204	HQ CO 7 MAR		200	30.2	23	35	73
1~MEF	1:MDIV	M11210	3/4		231	33.3	24	31	106
1~MEF	1:MDIV	M11303	HQ BT 11 MAR		232	43.7	28	45	148
1~MEF	1:MDIV	M11310	1/11		111	24.6	19	25	92
1~MEF	1:MDIV	M11320	2/11		282	31.4	22	31	83
1~MEF	1:MDIV	M11330	3/11		110	30.1	27	36	57
1~MEF	1:MDIV	M11340	5/11		54	32	24.5	33	72
1~MEF	1:MDIV	M11400	1 CEB		408	23.3	19	26	59
1~MEF	1:MDIV	M13160	2/7		110	69.8	40	99	188
1~MEF	1:MDIV	M20450	1 LAR		520	28.6	22	30	86
1~MEF	1:MDIV	M20470	3 LAR		754	23.7	21	27	54
1~MEF	1:MDIV	M21410	1 TANKS		1142	29.6	23	36	58

Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
OST by MEF MSC DODAAC UNIT									
1~MEF	1:MDIV	M21670	9 COMM		471	33.5	26	38	87
1~MEF	1:MDIV	M21820	3 AABN SUP		458	35.9	30.5	39	86
1~MEF	1:MDIV	M21825	3 AABN D CO		198	43.9	33	50	153
1~MEF	1:MDIV	M28350	1 FORCE RECON		61	28.8	19	24	93
1~MEF	1:MDIV	M33710	WPN FLD TRNG BN		176	26.2	25	30	40
1~MEF	1:MDIV	M35014	EAP		2041	19.4	15	21	41
1~MEF	1:MDIV	M92280	LAV TEST BR		89	25	17	25	86
1~MEF	1:MEU	M20195	MSSG 11 ORG		193	27.6	22	30	67
1~MEF	1:MEU	M20196	MSSG 15 ORG		165	28.7	19	22	75
1~MEF	1:MEU	M20310	15 MEU		65	25.5	18	39	57
1~MEF	1:MEU	M28389	MSSG 11 IX		190	58.6	65	67	67
1~MEF	1:MEU	M28391	MSSG 13 ORG		186	45.8	32	57	140
1~MEF	1:MEU	M28400	MSSG 13 IX		71	84.9	73	97	175
1~MEF	1:SRIG	M20371	1 SRIG		126	33.4	28	42	68
1~MEF	3:MAW	M00307	MWCS 38		148	35.9	27	44	84
1~MEF	3:MAW	M00371	MWSS 371		500	23.3	21	23	37
1~MEF	3:MAW	M00372	MWSS 372		204	31.2	25	33.5	76
1~MEF	3:MAW	M00373	MWSS 373		314	28.2	22	33	75
1~MEF	3:MAW	M00374	MWSS 374		391	34.9	29	43	84
1~MEF	3:MAW	M00376	AGSE		420	25.7	21	27	57
1~MEF	3:MAW	M00840	MACS 1		249	23.1	14	25	56
1~MEF	3:MAW	M00880	MACS 7		299	20.5	18	23	36
1~MEF	3:MAW	M22960	1 LAAM BN		733	19.9	17	22	31
1~MEF	3:MAW	M35100	MCAGCC		1587	25.2	21	27	57
2~MEF	2:FSSG	M12020	2 MED		69	29.2	21	40	66
2~MEF	2:FSSG	M21310	8 ESB		1337	26.7	20	26	64
2~MEF	2:FSSG	M27010	8 MOTORS		354	35	13	21	77
2~MEF	2:FSSG	M27121	2 MNT		154	39.7	31.5	47	119
2~MEF	2:FSSG	M27139	CSSD 21		164	20.6	16	20.5	64
2~MEF	2:FSSG	M93135	CTEP		67	39.7	27	41	112
2~MEF	2:FSSG	MMFAF5	GEN ACCT		107	32.1	15	22	143

Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
OST by MEF MSC DODAAC UNIT									
2~MEF	2:MFSSG	MML100	SMU		13064	20.9	19	24	37
2~MEF	2:MFSSG	MML205	ISSC		8047	17.4	14	21	38
2~MEF	2:MAW	M00146	WEATHER SVC		88	14.8	12	15	33
2~MEF	2:MAW	M00207	MWCS 28		269	29.3	22	39	65
2~MEF	2:MAW	M00271	MWSS 271		368	29.2	16	28	104
2~MEF	2:MAW	M00274	MWSS 274		390	20	17	22	43
2~MEF	2:MAW	M00850	MACS 2		168	32.9	21	33	119
2~MEF	2:MAW	M00870	MACS 6		221	27.6	14	19	43
2~MEF	2:MDIV	M12001	HQ BN 2 MARDIV		114	27.4	21	29	72
2~MEF	2:MDIV	M12210	3/8		79	24.8	20	26	77
2~MEF	2:MDIV	M12220	1/2		57	21.9	17	27	36
2~MEF	2:MDIV	M12310	1/10		174	20.3	17.5	25	36
2~MEF	2:MDIV	M12400	2 CEB		637	28.1	20	28	84
2~MEF	2:MDIV	M20460	2 LAI		743	29.1	22	35	65
2~MEF	2:MDIV	M21590	2 RADIO		76	23.9	21.5	27.5	61
2~MEF	2:MDIV	M21640	8 COMM		212	25.3	18.5	28.5	61
2~MEF	2:MDIV	M21810	2 AABN		301	33.2	21	30	111
2~MEF	2:MDIV	M28351	2 FORCE RECON		192	20.2	17	23	34
2~MEF	2:MDIV	M93177	TRNG SPT DIV		144	31.3	21	37	69
2~MEF	2:MEU	M20197	MSSG 22		303	33	21	34	107
3~MEF	1:MAW	M00107	MWCS 18		235	75.8	72	87	117
3~MEF	1:MAW	M00171	MWSS 171		387	54.5	55	68	89
3~MEF	1:MAW	M00172	MWSS 172		255	62.5	61	84	127
3~MEF	1:MAW	M00910	1 STINGER		62	57.2	50	90	117
3~MEF	1:MAW	M00979	MACS 4		277	69.5	67	92	119
3~MEF	1:MAW	M62613	MCAS IWAKUNI		729	76	81	92	113
3~MEF	1:MAW	M63026	MCAS FUTENMA		86	52.1	54	70	85
3~MEF	3:MFSSG	M29001	H&S BN		91	66.4	67	81	128
3~MEF	3:MFSSG	M29021	3 MNT		259	61.7	63	76	122
3~MEF	3:MFSSG	M29024	ELMACO		682	54	54.5	72	105
3~MEF	3:MFSSG	M29025	EMC		670	24	17	22	70

Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
OST by MEF MSC DODAAC UNIT									
3~MEF	3:FSSG	M29026	MTM		56	71.1	68.5	86.5	147
3~MEF	3:FSSG	M29028	GSM		1389	40.4	33	57	83
3~MEF	3:FSSG	M29040	3 SUPPORT BN		329	60.8	61	76	121
3~MEF	3:FSSG	M29100	9 ESB		459	57.2	61	74	105
3~MEF	3:FSSG	M69009	CSSG 3		807	54.1	44	72	121
3~MEF	3:FSSG	M97115	3 SUP BN		216	51.2	42	74	114
3~MEF	3:FSSG	MMFAG4	MNT FLT		55	59.1	61	75	91
3~MEF	3:FSSG	MMK100	GEN ACCT HI		5162	47.3	47	55	77
3~MEF	3:FSSG	MMK109	CSSG 3 (ISS MNT		848	28.7	21	37	74
3~MEF	3:FSSG	MMR100	3 SUP BN		8400	63.9	61	72	89
3~MEF	3:MDIV	M13001	HQ BN 3 MARDIV		275	56.7	59	73	98
3~MEF	3:MDIV	M13101	HQ 3 MAR		284	56.9	52.5	71	105
3~MEF	3:MDIV	M13120	2/3		82	65.3	62	74	148
3~MEF	3:MDIV	M13130	3/3		353	73.8	59	99	177
3~MEF	3:MDIV	M13220	3/2		181	59.5	65	68	90
3~MEF	3:MDIV	M13301	HQ BT 12 MAR		139	72.8	74	97	127
3~MEF	3:MDIV	M13310	1/12		161	65.3	43	98	143
3~MEF	3:MDIV	M13330	3/12		140	76.6	73	92	121.5
3~MEF	3:MDIV	M21580	1 RADIO		299	42.6	37	52	85
3~MEF	3:MDIV	M21635	7 COMM		446	74.6	67.5	88	189
3~MEF	3:MDIV	M21800	CAB		260	79.4	75	107	146
3~MEF	3:MDIV	MMR135	SUB UNIT 1		111	90.7	84	140	163
3~MEF	3:MEU	M29048	MSSG 31		155	56.1	44	81	146
3~MEF	3:MEU	MMJ132	31 MEU BLT 3/5		61	52.8	56	63	103
3~MEF	3:OTHER	M20380	H&SBNI III MEF		278	70.3	66	85	162
4~MEF	4:FSSG	M14021	H&S 4 MED		163	47.9	45	73	84
4~MEF	4:FSSG	M14550	4 LOG SPT		520	112.7	108	148	249
4~MEF	4:FSSG	M22320	6 ESB		1988	37.2	33	46	76
4~MEF	4:FSSG	M28110	H&S 6 MIT		589	59.1	43	83	114
4~MEF	4:FSSG	M29051	H&S BN		150	51.6	58	71	126
4~MEF	4:FSSG	M29060	4 SUP		198	69.2	51	74	154

Label	MEF	MSC	RUC	Unit			Number	Average	50%	75%	95%
OST by MEF MSC DODAAC UNIT	4~MEF	4:FSSG	M29070	4 MNT			1397	41.6	31	54	87
	4~MEF	4:MAW	M00407	MACG 48			328	54.8	46	50	117
	4~MEF	4:MAW	M00409	MWCS 48 DET B			149	57.4	46	69	123
	4~MEF	4:MAW	M00512	MWSS 474			219	20.3	16	22	45
	4~MEF	4:MAW	M00526	MWSS 472 DET A			188	19.4	17	21.5	47
	4~MEF	4:MAW	M00542	MWSS 473 DET B			169	32.7	28	47	63
	4~MEF	4:MAW	M00983	MASS 6 DET A			198	46.7	47	58	84
	4~MEF	4:MAW	M01149	MWSS 473			210	35.9	36	38	56
	4~MEF	4:MAW	M01309	MACS 24			211	25.7	23	31	44
	4~MEF	4:MAW	M03042	MAG 42 DET B			79	51	48	66	85
	4~MEF	4:MAW	M04171	4 LAAM H&S DET			192	23	17	27	45
	4~MEF	4:MAW	M23971	4 LAAM H&S			367	28.7	25	29	63
	4~MEF	4:MDIV	M14003	MP 4 MARDIV			113	26.4	24	24	44
	4~MEF	4:MDIV	M14030	4 LAR			1577	53.3	43	55	139
	4~MEF	4:MDIV	M14101	HQ 23 MAR			208	59.9	68	69	87
	4~MEF	4:MDIV	M14110	1/23			393	56.4	42	67	157
	4~MEF	4:MDIV	M14130	3/23			384	53.6	45	63	120
	4~MEF	4:MDIV	M14151	24 MAR			302	44	37.5	57	94
	4~MEF	4:MDIV	M14170	2/24			436	32.3	26	32	72
	4~MEF	4:MDIV	M14180	3/24			455	43.9	34	59	114
	4~MEF	4:MDIV	M14220	2/25			198	26	23	30	54
	4~MEF	4:MDIV	M14230	3/25			396	39.7	29	39	147
	4~MEF	4:MDIV	M14301	HQ BT 14 MAR			84	22.3	18	24	66
	4~MEF	4:MDIV	M14330	3/14			319	35.7	37	44	83
	4~MEF	4:MDIV	M14340	4/14			251	61.2	58	74	83
	4~MEF	4:MDIV	M14400	4 CEB			623	29.3	26	37	53
	4~MEF	4:MDIV	M14600	1/14			686	39.4	33	48	77
	4~MEF	4:MDIV	M14640	5/14			487	37.2	27	39	97
	4~MEF	4:MDIV	M14653	4 TANK			264	25	21	30	50
	4~MEF	4:MDIV	M14700	4 RECON			197	42.2	27	35	208
	4~MEF	4:MDIV	M21400	9 TANK			804	38.2	31	53.5	82

USMC CY96 Wholesale OST Report

Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
4~MEF	4:MDIV	M21440	4 TANK		835	38.1	33	44	106
4~MEF	4:MDIV	M21628	4 ANGLICO		139	25.8	17	22	97
4~MEF	4:MDIV	M21680	6 COMM		753	36.3	30	41	85
4~MEF	4:MDIV	M21830	4 AABN		928	50.1	41	63	117
4~MEF	4:MDIV	M75240	HQ COMM DET		171	27.7	20	36	52

USMC WHOLESALE INSTALLATION PROCESSING TIME (DOCUMENT DATE TO DAAS ESTABLISH DATE)						
CALENDAR YEAR 1996						
Label	MEF	MSC	RUC	Unit	Number	Average
USMC Overall DOCDT-ESTDT					147559	6.8
DOCDT-ESTDT by MEF						
1~MEF					64961	5.1
2~MEF					33360	5.1
3~MEF					28205	7.3
4~MEF					21033	13.9
DOCDT-ESTDT by MEF MSC						
1~MEF 1:FSSG					47889	4.4
1~MEF 1:MDIV					10112	7
1~MEF 1:MEU					1002	11.6
1~MEF 1:SRIG					138	6.9
1~MEF 3:MAW					5820	7
2~MEF 2:FSSG					27302	5.1
2~MEF 2:MAW					2012	5.3
2~MEF 2:MDIV					3597	5.1
2~MEF 2:MEU					407	8.7
3~MEF 1:MAW					2439	5.7
3~MEF 3:FSSG					22018	7.1
3~MEF 3:MDIV					31336	9.6
3~MEF 3:MEU					284	10.4
3~MEF 3:OTHER					328	7.9
4~MEF 4:FSSG					5660	16.7
4~MEF 4:MAW					2910	17.9
4~MEF 4:MDIV					12463	11.7
DOCDT-ESTDT by MEF MSC DODAAC UNIT	1~MEF	1:FSSG	M21300	7 ESB	635	4.4
	1~MEF	1:FSSG	M28280	7 MOTORS	771	4.8
						5
						1

USMC CY96 On-Base Processing Time Report (Wholesale Requisitions)

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Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
DOCDT-ESTDT by MEF MSC DODAAC UNIT									
1~MEF	1:FSSG	M28301	H&S BN		435	5.1	3	6	9
1~MEF	1:FSSG	M28321	1 MNT		236	4.7	3	6	15
1~MEF	1:FSSG	M28331	MSU		1059	5.7	3	6	12
1~MEF	1:FSSG	M28332	CSSD-14 IX		291	6.9	5	12	15
1~MEF	1:FSSG	M28339	CSSG 1 IX		1976	4.8	4	6	12
1~MEF	1:FSSG	M28340	MSU		1940	3.9	3	5	9
1~MEF	1:FSSG	M28341	SHOP STORES IP2		7738	3.9	3	5	8
1~MEF	1:FSSG	M28349	CSSD 12		406	6.1	4	6	18
1~MEF	1:FSSG	M28357	CSSD 16 (MIP)		354	7.2	5	9	17
1~MEF	1:FSSG	M28370	1 LSB		631	5.4	3	5	16
1~MEF	1:FSSG	M97111	MEDLOG		146	26.4	2	7	117
1~MEF	1:FSSG	MMC100	GEN ACCT		30254	3.9	2	4	16
1~MEF	1:FSSG	MMC199	TAP ACCT		51	47.1	53	53	64
1~MEF	1:FSSG	MMFAG8	MNT FLOAT		206	6.1	2	5	15
1~MEF	1:FSSG	MMT100	GEN ACCT MCAGCC		512	14.2	4	5	58
1~MEF	1:MDIV	M11001	HQ BN 1 MARDIV		355	8.4	4	6	28
1~MEF	1:MDIV	M1104	HQ CO 1 MAR		84	10.3	6	10	36
1~MEF	1:MDIV	M1110	3/5		209	4.6	4	5	10
1~MEF	1:MDIV	M11120	1/1		57	16.8	6	16	35
1~MEF	1:MDIV	M11130	2/1 DEPL		165	6	5	7	10
1~MEF	1:MDIV	M11140	1/4		159	9.8	7	15	22
1~MEF	1:MDIV	M11180	2/4		124	5.6	3	6	12
1~MEF	1:MDIV	M11204	HQ CO 7 MAR		256	8	5	9	24
1~MEF	1:MDIV	M11210	3/4		273	7.9	6	7	16
1~MEF	1:MDIV	M11303	HQ BT 11 MAR		272	7.2	4	7	13
1~MEF	1:MDIV	M11310	1/11		135	6.9	3	5	13
1~MEF	1:MDIV	M11320	2/11		333	7.5	5	8	14
1~MEF	1:MDIV	M11330	3/11		148	6.2	4	7	13
1~MEF	1:MDIV	M11340	5/11		63	7.3	5	7	14
1~MEF	1:MDIV	M11400	1 CEB		461	7.1	4	7	27
1~MEF	1:MDIV	M11360	2/7		156	7.7	7	9	17

USMC CY96 On-Base Processing Time Report (Wholesale Requisitions)

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Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
DOCDT-ESTDT by MEF MSC DODAAC UNIT	1:MEF	1:MDIV	M20450	1 LAR	577	7.2	6	7	13
	1:MEF	1:MDIV	M20470	3 LAR	836	6.1	4	6	15
	1:MEF	1:MDIV	M21410	1 TANKS	1304	7.7	5	8	16
	1:MEF	1:MDIV	M21670	9 COMM	561	5.1	4	5	17
	1:MEF	1:MDIV	M21820	3 AABN SUP	531	9.4	6	12	21
	1:MEF	1:MDIV	M21825	3 AABN D CO	241	11.4	7	11	22
	1:MEF	1:MDIV	M28350	1 FORCE RECON	89	5.9	5	5	10
	1:MEF	1:MDIV	M33710	WPN FLD TRNG BN	197	5.7	6	7	10
	1:MEF	1:MDIV	M35014	EAP	2300	5.4	5	6	13
	1:MEF	1:MDIV	M92280	LAV TEST BR	98	4.9	2	3	13
	1:MEF	1:MEU	M20195	MSSG 11 ORG	227	4.7	4	4	12
	1:MEF	1:MEU	M20196	MSSG 15 ORG	187	15.2	5	6	7
	1:MEF	1:MEU	M20310	15 MEU	67	4	2	2	17
	1:MEF	1:MEU	M28389	MSSG 11 IX	200	8.5	13	13	14
	1:MEF	1:MEU	M28391	MSSG 13 ORG	202	11.2	5	19	31
	1:MEF	1:MEU	M28400	MSSG 13 IX	96	28.4	2.5	55	124
	1:MEF	1:SRIG	M20371	1 SRIG	138	6.9	5	8	20
	1:MEF	3:MAW	M00307	MWCS 38	177	5.8	6	8	11
	1:MEF	3:MAW	M00371	MWSS 371	579	4.1	3	5	9
	1:MEF	3:MAW	M00372	MWSS 372	256	7	4	8	22
	1:MEF	3:MAW	M00373	MWSS 373	386	7.7	7	9	19
	1:MEF	3:MAW	M00374	MWSS 374	471	9.2	6	8	40
	1:MEF	3:MAW	M00376	AGSE	516	12.3	5	12	23
	1:MEF	3:MAW	M00840	MACS 1	301	5.5	2	4	7
	1:MEF	3:MAW	M00880	MACS 7	329	5.1	5	6	11
	1:MEF	3:MAW	M22960	1 LAAM BN	791	4.5	4	6	10
	1:MEF	3:MAW	M35100	MCAGCC	1864	7.1	5	7	20
	2:MEF	2:FSSG	M12020	2 MED	82	3.8	2	2	18
	2:MEF	2:FSSG	M21310	8 ESB	1578	5.9	3	6	9
	2:MEF	2:FSSG	M27010	8 MOTORS	412	17.4	3	5	33
	2:MEF	2:FSSG	M27121	2 MNT	218	7.6	5	6	23

USMC CY96 On-Base Processing Time Report (Wholesale Requisitions)

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Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
DOCDT-ESTDT by MEF MSC DODAAC UNIT									
2~MEF	2:FSSG	M27139	CSSD 21		189	2.5	2	4	5
2~MEF	2:FSSG	M93135	CTEP		83	16	7	15	33
2~MEF	2:FSSG	MMFAF5	GEN ACCT		134	11.9	2	5	130
2~MEF	2:FSSG	MML100	SMU		15239	4	2	4	7
2~MEF	2:FSSG	MML205	ISSC		9276	5.1	4	6	14
2~MEF	2:MAW	M00146	WEATHER SVC		93	2.1	1	2	3
2~MEF	2:MAW	M00207	MWCS 28		343	4.9	2	4	13
2~MEF	2:MAW	M00271	MWSS 271		451	4.1	3	4	9
2~MEF	2:MAW	M00274	MWSS 274		456	4.5	2	5	8
2~MEF	2:MAW	M00850	MACS 2		199	3.8	3	5	7
2~MEF	2:MAW	M00870	MACS 6		242	11.6	2	3	5
2~MEF	2:MDIV	M12001	HQ BN 2 MARDIV		137	6.4	4	5	20
2~MEF	2:MDIV	M12210	3/8		99	6.7	4	7	32
2~MEF	2:MDIV	M12220	1/2		65	5.3	2	4	7
2~MEF	2:MDIV	M12310	1/10		196	4.6	3	5	9
2~MEF	2:MDIV	M12400	2 CEB		787	4.8	4	5	7
2~MEF	2:MDIV	M20460	2 LAI		806	5.2	3	6	12
2~MEF	2:MDIV	M21590	2 RADIO		89	2.6	2	3	7
2~MEF	2:MDIV	M21640	8 COMM		258	3.3	2	4	8
2~MEF	2:MDIV	M21810	2 AABN		357	5.5	4	6	15
2~MEF	2:MDIV	M28351	2 FORCE RECON		238	3.9	2	4	14
2~MEF	2:MDIV	M93177	TRNG SPT DIV		177	6.2	4	6	25
2~MEF	2:MEU	M20197	MSSG 22		352	9.3	4	7	68
3~MEF	1:MAW	M00107	MWCS 18		275	6.8	4	9	19
3~MEF	1:MAW	M00171	MWSS 171		459	6.6	4	7	15
3~MEF	1:MAW	M00172	MWSS 172		292	6.7	5	8	14
3~MEF	1:MAW	M00910	1 STINGER		72	3.8	4.5	5	6
3~MEF	1:MAW	M00979	MACS 4		309	5.5	4	7	13
3~MEF	1:MAW	M62613	MCAS IWAKUNI		846	4.3	4	6	9
3~MEF	1:MAW	M63026	MCAS FUTENMA		94	4.3	4	5	10
3~MEF	3:FSSG	M29001	H&S BN		105	8.5	4	14	20

USMC CY96 On-Base Processing Time Report (Wholesale Requisitions)

Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
DOCDT-ESTDT by MEF MSC DODAAC UNIT									
3~MEF	3:FSSG	M29021	3 MNT		286	5.3	4	6	19
3~MEF	3:FSSG	M29024	ELMACO		740	5.6	4	6	15
3~MEF	3:FSSG	M29025	EMC		799	4.9	4	6	13
3~MEF	3:FSSG	M29026	MTM		64	8.3	4	14	28
3~MEF	3:FSSG	M29028	GSM		1611	7	4	9	20
3~MEF	3:FSSG	M29040	3 SUPPORT BN		349	6.8	4	7	25
3~MEF	3:FSSG	M29100	9 ESB		518	7.1	5	7	22
3~MEF	3:FSSG	M69009	CSSG 3		890	20.8	7	20	83
3~MEF	3:FSSG	M97115	3 SUP BN		255	7.3	4	7	30
3~MEF	3:FSSG	MMFAG4	MNT FLT		72	4.9	4	5	15
3~MEF	3:FSSG	MMK100	GEN ACCT HI		5740	8.2	4	10	21
3~MEF	3:FSSG	MMK109	CSSG 3 (ISS MNT		930	9.1	7	10	28
3~MEF	3:FSSG	MMR100	3 SUP BN		9437	5.2	4	5	6
3~MEF	3:MDIV	M13001	HQ BN 3 MARDIV		314	4.2	3	4	14
3~MEF	3:MDIV	M13101	HQ 3 MAR		325	12.7	8	17	31
3~MEF	3:MDIV	M13120	2/3		87	17.7	10	15	76
3~MEF	3:MDIV	M13130	3/3		394	14.3	9	21	42
3~MEF	3:MDIV	M13220	3/2		193	7.2	5	7	19
3~MEF	3:MDIV	M13301	HQ BT 12 MAR		157	5.4	4	7	13
3~MEF	3:MDIV	M13310	1/12		187	17.4	7	10	75
3~MEF	3:MDIV	M13330	3/12		154	7	5	10	16
3~MEF	3:MDIV	M21580	1 RADIO		335	11.3	6	7	23
3~MEF	3:MDIV	M21635	7 COMM		472	6.5	4	6	21
3~MEF	3:MDIV	M21800	CAB		305	5.4	4	5	14
3~MEF	3:MDIV	MMR135	SUB UNIT 1		126	13	6	18	34
3~MEF	3:MEU	M29048	MSSG 31		177	9.4	5	13	28
3~MEF	3:MEU	MMU132	31 MEU BLT 3/5		71	12.2	5	10	41
3~MEF	3:OTHER	M20380	H&S BN III MEF		328	7.9	4	6.5	20
4~MEF	4:FSSG	M14021	H&S 4 MED		180	17.3	10	36	36
4~MEF	4:FSSG	M14550	4 LOG SPT		589	55.1	40	85	149
4~MEF	4:FSSG	M22320	6 ESB		2230	14.1	10	21	37

USMC CY96 On-Base Processing Time Report (Wholesale Requisitions)

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Label	MEF	MSC	HUC	Unit	Number	Average	50%	75%	95%
DOCDT-ESTDT by MEF MSC DODAAC UNIT									
4~MEF	4:FSSG	M28110	H&S 6 MT		669	9.7	8	10	16
4~MEF	4:FSSG	M29051	H&S BN		116	19.3	9	33	42
4~MEF	4:FSSG	M29060	4 SUP		228	16.6	8	20	37
4~MEF	4:FSSG	M29070	4 MNT		1566	9	7	9	23
4~MEF	4:MAW	M00048	MAG 41		58	7.4	4	6	20
4~MEF	4:MAW	M00407	MACG 48		350	35.8	35	38	84
4~MEF	4:MAW	M00409	MWCS 48 DET B		162	26.3	12	25	91
4~MEF	4:MAW	M00512	MWSS 474		249	7.5	6	6	17
4~MEF	4:MAW	M00526	MWSS 472 DET A		214	8.7	4	15	34
4~MEF	4:MAW	M00542	MWSS 473 DET B		186	11.1	3	11	40
4~MEF	4:MAW	M00983	MASS 6 DET A		220	9	11	11	12
4~MEF	4:MAW	M01149	MWSS 473		233	6.7	5	8	20
4~MEF	4:MAW	M01199	MWSS 474 DET A		67	4.9	4	5	6
4~MEF	4:MAW	M01309	MACS 24		220	8.1	5	14	20
4~MEF	4:MAW	M03042	MAG 42 DET B		88	1.4	0	4	4
4~MEF	4:MAW	M04171	4 LAAM H&S DET		217	4.4	4	5	8
4~MEF	4:MAW	M23971	4 LAAM H&S		408	7.2	6	7	15
4~MEF	4:MDIV	M14003	MP 4 MARDIV		122	5.4	2	5	7
4~MEF	4:MDIV	M14030	4 LAR		1690	10.9	8	11	30
4~MEF	4:MDIV	M14101	HQ 23 MAR		216	26.8	32	33	33
4~MEF	4:MDIV	M14110	1/23		447	22.2	8	31	93
4~MEF	4:MDIV	M14130	3/23		429	18.2	7	15	83
4~MEF	4:MDIV	M14151	24 MAR		345	11.7	4	20	44
4~MEF	4:MDIV	M14170	2/24		466	8.4	6	7	37
4~MEF	4:MDIV	M14180	3/24		508	13.2	6	20	30
4~MEF	4:MDIV	M14210	1/25		59	14.9	10	25	35
4~MEF	4:MDIV	M14220	2/25		212	12.6	9	17	42
4~MEF	4:MDIV	M14230	3/25		442	9.9	5	7	35
4~MEF	4:MDIV	M14301	HQ BT 14 MAR		109	7	6	10	11
4~MEF	4:MDIV	M14330	3/14		348	12.3	7	14	36
4~MEF	4:MDIV	M14340	4/14		267	32.5	36	37	44

USMC CY96 On-Base Processing Time Report (Wholesale Requisitions)

Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
DOCDT-ESTDT by MEF MSC DODAAC UNIT	4-MEF	4:MDIV	M14400	4 CEB	708	6.6	5	6	11
	4-MEF	4:MDIV	M14600	1/14	748	13.6	7	13.5	44
	4-MEF	4:MDIV	M14640	5/14	561	6.4	5	7	16
	4-MEF	4:MDIV	M14653	4 TANK	304	5.6	6	7	11
	4-MEF	4:MDIV	M14700	4 RECON	216	7.6	6	7	20
	4-MEF	4:MDIV	M21400	9 TANK	937	12.6	6	17	37
	4-MEF	4:MDIV	M21440	4 TANK	920	11.9	8	19	32
	4-MEF	4:MDIV	M21628	4 ANGLICO	161	9.5	4	4	71
	4-MEF	4:MDIV	M21680	6 COMM	860	9.8	5	12	28
	4-MEF	4:MDIV	M21830	4 AABN	1020	8.8	7	13	15
	4-MEF	4:MDIV	M75240	HQ COMM DET	217	6.2	5	7	7

USMC WHOLESALE SHIP TO RECEIPT TIME				CALENDAR YEAR 1996			
Label	MEF	MSC	RUC	Unit	Number	Average	50% 75% 95%
USMC Overall SHIPDT-D6S					1388828	21.8	13 26 69
SHIPDT-D6S by MEF	1~MEF				61692	13.6	10 15 39
	2~MEF				31007	14.7	11 16 37
	3~MEF				26423	45.5	46 59 89
	4~MEF				19706	26.8	18 31 83
SHIPDT-D6S by MEF MSC	1~MEF 1:FSSG				45946	12	9 14 29
	1~MEF 1:MDIV				9266	18.9	12 19 59
	1~MEF 1:MEU				942	29.7	20 47 69
	1~MEF 1:SRIG				132	22.4	20 26 50
	1~MEF 3:MAW				5406	15.6	11 16 45
	2~MEF 2:FSSG				25458	13.5	11 16 30
	2~MEF 2:MAW				1874	17.6	11 19 55
	2~MEF 2:MDIV				3271	20.6	13 21 66
	2~MEF 2:MEU				366	23.8	15 24 91
	3~MEF 1:MAW				2297	59	60 76 107
	3~MEF 3:FSSG				20632	42.7	44 56 77
	3~MEF 3:MDIV				2926	54	49 69 125
	3~MEF 3:MEU				254	42.5	37 52 128
	3~MEF 3:OTHER				314	57.3	54 71 129
	4~MEF 4:FSSG				5343	30.7	19 39 91
	4~MEF 4:MAW				2733	20.4	14 25 62
	4~MEF 4:MDIV				11630	26.6	18 31 81
SHIPDT-D6S by MEF MSC DODAAC UNIT	1~MEF 1:FSSG	M21300	7 ESB		579	10.3	9 12 22
	1~MEF 1:FSSG	M28280	7 MOTORS		718	14.7	11 16 44

USMC CY96 Wholesale Shipping/Receipt Takeup Time Report

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Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
SHIPDT-D6S by MEF MSC DODAAC UNIT	1~MEF	1:FSSG	M28301	H&S BN	386	15.3	12	18	39
	1~MEF	1:FSSG	M28321	1 MNT	225	12	11	13	25
	1~MEF	1:FSSG	M28331	MSU	1029	10.2	7	10	34
	1~MEF	1:FSSG	M28332	CSSD-14 IX	272	11.5	8	13	25
	1~MEF	1:FSSG	M28339	CSSG 1IX	1840	9	8	11	16
	1~MEF	1:FSSG	M28340	MSU	1891	11.8	8	13	39
	1~MEF	1:FSSG	M28341	SHOP STORES IP2	7611	7.4	5	8	23
	1~MEF	1:FSSG	M28349	CSSD 12	382	17.1	14.5	22	31
	1~MEF	1:FSSG	M28357	CSSD 16 (MIP)	331	15	11	17	44
	1~MEF	1:FSSG	M28370	1 LSB	591	17	11	15	56
	1~MEF	1:FSSG	M97111	MEDLOG	117	24.5	21	28	64
	1~MEF	1:FSSG	MMC100	GEN ACCT	29027	12.9	10	15	28
	1~MEF	1:FSSG	MMC199	TAP ACCT	51	37.8	27	49	91
	1~MEF	1:FSSG	MMFAG8	MNT FLOAT	188	8.7	5	9	18
	1~MEF	1:FSSG	MMT100	GEN ACCT MCAGCC	496	14.4	11	15	30
	1~MEF	1:MDIV	M11001	HQ BN 1 MARDIV	315	14.5	11	16	36
	1~MEF	1:MDIV	M11104	HQ CO 1 MAR	73	33.3	13	58	101
	1~MEF	1:MDIV	M11110	3/5	194	13.2	12	15	28
	1~MEF	1:MDIV	M11120	1/1	55	45	26	64	200
	1~MEF	1:MDIV	M11130	2/1 DEPL	156	17.5	15	19	34
	1~MEF	1:MDIV	M11140	1/4	140	49.7	29.5	57.5	208.5
	1~MEF	1:MDIV	M11180	2/4	115	18	14	19	50
	1~MEF	1:MDIV	M11204	HQ CO 7 MAR	228	19.5	14	19	66
	1~MEF	1:MDIV	M11210	3/4	240	22.6	12	22	91.5
	1~MEF	1:MDIV	M11303	HQ BT 11 MAR	250	32.3	20	34	114
	1~MEF	1:MDIV	M11310	1/11	122	16.5	11	14	56
	1~MEF	1:MDIV	M11320	2/11	307	20.4	12	22	70
	1~MEF	1:MDIV	M11330	3/11	119	20	19	24	47
	1~MEF	1:MDIV	M11340	5/11	56	20.4	13.5	23	60
	1~MEF	1:MDIV	M11400	1 CEB	434	12.6	11	14	26
	1~MEF	1:MDIV	M13160	2/7	124	58.9	29	92.5	179

USMC CY96 Wholesale Shipping/Receipt Takeup Time Report

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Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
SHIPDT-D6S by MEF MSC DODAAC UNIT	1~MEF	1:MDIV	M20450	1 LAR	530	19	12	20	62
	1~MEF	1:MDIV	M20470	3 LAR	781	15.3	13	16	46
	1~MEF	1:MDIV	M21410	1 TANKS	1200	18.2	13	22	45
	1~MEF	1:MDIV	M21670	9 COMM	509	23.7	15	26	69
	1~MEF	1:MDIV	M21820	3 AABN SUP	484	25	17	27	78
	1~MEF	1:MDIV	M21825	3 AABN D CO	215	31.1	21	29	139
	1~MEF	1:MDIV	M28350	1 FORCE RECON	70	16.3	12	14	52
	1~MEF	1:MDIV	M33710	WPN FLD TRNG BN	189	15.5	14	19	29
	1~MEF	1:MDIV	M35014	EAP	2158	11.5	8	11	31
	1~MEF	1:MDIV	M92280	LAV TEST BR	92	17.3	9.5	13	95
	1~MEF	1:MEU	M20195	MSSG 11 ORG	214	20	15	22	57
	1~MEF	1:MEU	M20196	MSSG 15 ORG	172	11.7	9	12.5	32
	1~MEF	1:MEU	M20310	15 MEU	67	15.8	11	18	43
	1~MEF	1:MEU	M28389	MSSG 11 IX	193	45.6	48	51	62
	1~MEF	1:MEU	M28391	MSSG 13 ORG	189	34.4	21	30	133
	1~MEF	1:MEU	M28400	MSSG 13 IX	84	57.5	57	66	78
	1~MEF	1:SRIG	M20371	1 SRIG	132	22.4	20	26	50
	1~MEF	3:MAW	M00307	MWCS 38	155	26.1	17	35	78
	1~MEF	3:MAW	M00371	MWSS 371	545	15.6	14	16	28
	1~MEF	3:MAW	M00372	MWSS 372	234	21.2	15	22	74
	1~MEF	3:MAW	M00373	MWSS 373	362	16.9	11	21	51
	1~MEF	3:MAW	M00374	MWSS 374	446	24.9	14	34	81
	1~MEF	3:MAW	M00376	AGSE	472	15	9	14	54
	1~MEF	3:MAW	M00840	MACS 1	277	14.9	8	15	53
	1~MEF	3:MAW	M00880	MACS 7	312	12.3	10	13	24
	1~MEF	3:MAW	M22960	1 LAAM BN	760	10.8	9	13	22
	1~MEF	3:MAW	M35100	MCAGGCC	1703	13.7	11	15	31
	2~MEF	2:FSSG	M12020	2 MED	77	21.2	13	26	60
	2~MEF	2:FSSG	M21310	8 ESB	1465	17.3	12	17	55
	2~MEF	2:FSSG	M27010	8 MOTORS	387	15.8	8	14	62
	2~MEF	2:FSSG	M27121	2 MNT	203	28	15	32	103

USMC CY96 Wholesale Shipping/Receipt Takeup Time Report

Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
SHIPDT-D6S by MEF MSC DODAAC UNIT									
2~MEF	2:FSSG	M27139	CSSD 21		173	15.9	10	16	57
2~MEF	2:FSSG	M93135	CTEP		74	13.4	9	14	29
2~MEF	2:FSSG	MMFAF5	GEN ACCT		116	9.8	7.5	12	18
2~MEF	2:FSSG	MML100	SMU		14320	14.6	13	17	27
2~MEF	2:FSSG	MML205	ISSC		8565	10.5	7	12	31
2~MEF	2:MAW	M00146	WEATHER SYC		91	10.2	9	11	28
2~MEF	2:MAW	M00207	MWCS 28		312	20.2	15	29	54
2~MEF	2:MAW	M00271	MWSS 271		408	21.9	9.5	19	88
2~MEF	2:MAW	M00274	MWSS 274		436	12.5	10	14	35
2~MEF	2:MAW	M00850	MACS 2		190	24.1	14	21	116
2~MEF	2:MAW	M00870	MACS 6		229	12.7	9	14	29
2~MEF	2:MDIV	M12001	HQ BN 2 MARDIV		127	16.3	10	16	35
2~MEF	2:MDIV	M12210	3/8		82	14.9	10	17	41
2~MEF	2:MDIV	M12220	1/2		62	13.4	11	15	29
2~MEF	2:MDIV	M12310	1/10		182	12.6	11.5	16	22
2~MEF	2:MDIV	M12400	2 CEB		699	21.6	13	22	78
2~MEF	2:MDIV	M20460	2 LAI		757	21.1	15	27	56
2~MEF	2:MDIV	M21590	2 RADIO		82	16.7	14	19	40
2~MEF	2:MDIV	M21640	8 COMM		234	19.6	12	21	59
2~MEF	2:MDIV	M21810	2 AABN		324	24.8	14	20	104
2~MEF	2:MDIV	M28351	2 FORCE RECON		209	13.4	12	15	26
2~MEF	2:MDIV	M93177	TRNG SPT DIV		158	15.1	9	14	46
2~MEF	2:MEU	M20197	MSSG 22		316	21.5	13.5	21	90
3~MEF	1:MAW	M00107	MWCS 18		259	64.4	64	77	108
3~MEF	1:MAW	M00171	MWSS 171		422	45.1	47	58	83
3~MEF	1:MAW	M00172	MWSS 172		276	52.6	50.5	70	122
3~MEF	1:MAW	M00910	1 STINGER		65	50.8	43	82	111
3~MEF	1:MAW	M00979	MACS 4		285	60.9	57	82	112
3~MEF	1:MAW	M62613	MCAS IWAKUNI		811	69.1	73	83	104
3~MEF	1:MAW	M63026	MCAS FUTENMA		92	42.1	45	59	76
3~MEF	3:FSSG	M29001	H&S BN		92	53	48	56.5	124

USMC CY96 Wholesale Shipping/Receipt Takeup Time Report

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Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
SHIPDT-D6S by MEF MSC DODAAC UNIT									
3~MEF	3:FSSG	M29021	3 MNT		265	54	55	70	118
3~MEF	3:FSSG	M29024	ELMACO		702	45.8	47	60	97
3~MEF	3:FSSG	M29025	EMC		740	16.4	11	13	60
3~MEF	3:FSSG	M29026	MTM		60	56.6	4.9	69	138.5
3~MEF	3:FSSG	M29028	GSM		1483	30.9	21	49	74
3~MEF	3:FSSG	M29040	3 SUPPORT BN		341	49.1	51	62	115
3~MEF	3:FSSG	M29100	9 ESB		491	46.4	4.9	65	89
3~MEF	3:FSSG	M69009	CSSG 3		864	28.7	26	40	64
3~MEF	3:FSSG	M97115	3 SUP BN		233	34.7	27	47	89
3~MEF	3:FSSG	MMFAG4	MNT FLT		63	47.2	4.9	61	84
3~MEF	3:FSSG	MMK100	GEN ACCT HI		5365	34.7	34	42	57
3~MEF	3:FSSG	MMK109	CSSG 3 (ISS MNT		886	17.8	11	19	54
3~MEF	3:FSSG	MMR100	3 SUP BN		8839	54.2	52	63	77
3~MEF	3:MDIV	M13001	HQ BN 3 MARDIV		282	49.5	52	65	92
3~MEF	3:MDIV	M13101	HQ 3 MAR		307	39.5	36	46	88
3~MEF	3:MDIV	M13120	2/3		86	46.9	40	61	138
3~MEF	3:MDIV	M13130	3/3		363	53.8	38	69	163
3~MEF	3:MDIV	M13220	3/2		185	49.3	57	58	72
3~MEF	3:MDIV	M13301	HQ BT 12 MAR		151	60.8	56	88	112
3~MEF	3:MDIV	M13310	1/12		174	45.7	35.5	55	115
3~MEF	3:MDIV	M13330	3/12		147	65	64	87	112
3~MEF	3:MDIV	M21580	1 RADIO		316	29.2	28	40	67
3~MEF	3:MDIV	M21635	7 COMM		454	64.3	56	72	169
3~MEF	3:MDIV	M21800	CAB		277	71.3	66	95	138
3~MEF	3:MDIV	M20135	SUB UNIT 1		104	84.2	74.5	133	149
3~MEF	3:MEU	M29048	MSSG 31		161	41.7	24	51	128
3~MEF	3:MEU	M1132	31 MEU BLT 3/5		65	36.6	34	50	68
3~MEF	3:OTHER	M20380	H&S BN III MEF		314	57.3	54	71	129
4~MEF	4:FSSG	M14021	H&S 4 MED		161	27.5	20	36	71
4~MEF	4:FSSG	M14550	4 LOG SPT		551	52.7	44	83	104
4~MEF	4:FSSG	M22320	6 ESB		2118	19.3	14	21	50

USMC CY96 Wholesale Shipping/Receipt Takeup Time Report

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Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
SHIPDT-D6S by MEF MSC DODAAC UNIT									
4~MEF	4:FSSG	M28110	H&S 6 MT		622	45.5	34	64	96
4~MEF	4:FSSG	M29051	H&S BN		113	43.8	30	80	113
4~MEF	4:FSSG	M29060	4 SUP		226	53.5	43	67	133
4~MEF	4:FSSG	M29070	4 MNT		1470	28.5	18	33	78
4~MEF	4:MAW	M00407	MACG 48		333	17.6	13	13	83
4~MEF	4:MAW	M00409	MWCS 48 DET B		149	27.8	26	31	48
4~MEF	4:MAW	M00512	MWSS 474		225	9.6	7	10	21
4~MEF	4:MAW	M00526	MWSS 472 DET A		197	6.7	6	8	14
4~MEF	4:MAW	M00542	MWSS 473 DET B		175	17.6	9	16	55
4~MEF	4:MAW	M00983	MASS 6 DET A		205	33.1	34	43	65
4~MEF	4:MAW	M01149	MWSS 473		220	24.2	23	27	41.5
4~MEF	4:MAW	M01199	MWSS 474 DET A		63	12.6	7	9	56
4~MEF	4:MAW	M01309	MACS 24		215	13.8	10	19	29
4~MEF	4:MAW	M03042	MAG 42 DET B		87	44.4	42	63	73
4~MEF	4:MAW	M04171	4 LAAM H&S DET		203	15	13	18	31
4~MEF	4:MAW	M23971	4 LAAM H&S		382	17.9	16	20	41
4~MEF	4:MDIV	M14003	MP 4 MARDIV		122	16.6	16	21	22
4~MEF	4:MDIV	M14030	4 LAR		1567	39.2	30	42	127
4~MEF	4:MDIV	M14101	HQ 23 MAR		208	30.9	34	35	77
4~MEF	4:MDIV	M14110	1/23		418	30.4	17.5	32	116
4~MEF	4:MDIV	M14130	3/23		394	30.3	19	51	75
4~MEF	4:MDIV	M14151	24 MAR		321	28.5	16	37	71
4~MEF	4:MDIV	M14170	2/24		442	20.4	16	20	46
4~MEF	4:MDIV	M14180	3/24		480	26.6	20	27	85.5
4~MEF	4:MDIV	M14220	2/25		208	9.2	8	10	21
4~MEF	4:MDIV	M14230	3/25		429	24.6	18	24	118
4~MEF	4:MDIV	M14301	HQ BT 14 MAR		100	12	6	11	57
4~MEF	4:MDIV	M14330	3/14		330	18.7	12.5	28	63
4~MEF	4:MDIV	M14340	4/14		253	25.7	21	38	48
4~MEF	4:MDIV	M14400	4 CEB		664	19.8	16	28	45
4~MEF	4:MDIV	M14600	1/14		698	21.7	20	27	52

USMC CY96 Wholesale Shipping/Receipt Takeup Time Report

Label	MEF	MSC	RUC	Unit	Number	Average	50%	75%	95%
SHIPDT-D6S by MEF MSC DODAAC UNIT	4~MEF	4:MDIV	M14640	5/14	510	2.6	2.0	2.6	8.1
	4~MEF	4:MDIV	M14653	4 TANK	291	16.1	11	21	36
	4~MEF	4:MDIV	M14700	4 RECON	202	28.9	14	22	147
	4~MEF	4:MDIV	M21400	9 TANK	856	22.1	14	29	50
	4~MEF	4:MDIV	M21440	4 TANK	844	22.6	13	25	56
	4~MEF	4:MDIV	M21628	4 ANGLICO	151	14.3	11	14	38
	4~MEF	4:MDIV	M21680	6 COMM	808	22.5	11	25	77
	4~MEF	4:MDIV	M21830	4 AABN	948	38.4	29	49	101
	4~MEF	4:MDIV	M75240	HQ COMM DET	205	18.2	12	19	49